



# POPULATION AGEING AND SLOWING WORKFORCE GROWTH

Research Partnership between **National Trades Union Congress (NTUC)**,  
**Singapore University of Social Sciences (SUSS)** and **Tsao Foundation**

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and Tsao Foundation**



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## Executive Summary

With persistent low birth rates coupled with an ageing population, Singapore's resident labour force is expected to be older. At current levels, the proportion of persons aged 55 and older in the labour force has increased from 19% to 27% over the last decade (2012–2022). With fewer births observed over the years, the number of young entrants into the labour force has also slowed.

This demographic change to the labour force is expected to influence government and businesses' responses to this new challenge. Policies and programmes are expected to be developed or enhanced in reaction to this development and they will ultimately have an impact on industrial relations moving forward. For example, as the number of young workers decreases, businesses may have to tap on other sources of manpower outside of the labour force e.g., retirees or women who left the labour force to care for their families. Where suitable alternative sources of manpower are not available or viable, the automation of certain industries may be the solution. In this light the Labour Movement (LM) will not only have to grapple with a changing labour landscape, but also the accompanying evolving industrial relations.

The research project presented here is thus timely given these recent developments and serves to provide the LM with pertinent information to review its current position and policies regarding labour relations in Singapore with an eye on the plausible future scenario of the Singapore labour force. To do this, a multi-method study design was employed to address the various questions that were salient for the LM. This encompassed constructing labour force projections based on available data; examining how automation will be a force of change for the Singapore labour force; conducting a content analysis that reviewed pertinent global policies implemented by countries in response to an ageing workforce; and examining the challenges faced by mature workers and women with caregiving responsibilities either currently in the workforce or seeking to return, and the views of HR practitioners/hiring managers/C-Suite executives with older employees in their organisations, using both qualitative and quantitative data. The research team also interviewed union leaders who shared their perspectives on the ageing workforce and the challenges faced by mature workers in their unions.

## Future Labour Force Projections

To better appreciate the future trends in the Singapore labour force, an artificial neural network autoregression was utilised to construct a five-year ahead forecast of key labour market indicators at the aggregate and industry levels. This produced several salient observations that should be noted.

First, we find that the labour market is generally expected to recover, as reflected by the forecasted increase in the job vacancy to unemployment ratio and fall in the unemployment rate.

Second, at the industry level however, the manufacturing industry is expected to experience some headwinds in employment growth, which is expected to be weak, while the construction industry is expected to see a decline in employment growth.

Finally, job vacancies across all industries are expected to decline over time. The reduction in job vacancies may reflect the easing of policies targeted to support job losses during the COVID-19 pandemic. Importantly, the expected decline in job vacancies may lead to greater search frictions for job seekers and potentially contribute to longer unemployment spells.

## Movement Towards Automation

For countries that are grappling with slowing workforce growth, one strategy that is bound to arise is to automate. Automation should not be viewed as a recent phenomenon but one that has been around for some time. Prior to this it has been part of the productivity movement where businesses or industries that aimed to be efficient and lower the cost of production would seek to pivot from manpower to machines. More recently, businesses that are unable to find manpower have also sought to pivot towards automation to overcome their dependence on a limited and highly sought after manpower pool.

The analysis was carried based on international data on the industrial robots for the period 2005–2021. It did not take into consideration service robots and other technologies such as artificial intelligence and the recent development of generative AI. In general, the observations suggest the adoption of industrial robots is likely to have a positive impact on the labour force by creating more job opportunities, especially for male workers and workers with a middle level of education (i.e., upper secondary or post-secondary non-tertiary education). Therefore, the gap of unemployment rates between genders is likely to be widened by automation, but it will reduce the gap of unemployment between workers with intermediate and advanced education.

However, as Agrawal et al. (2019) have argued, “the net effect (of artificial intelligence on labour) is an empirical question and will vary across applications and industries”. In the same vein, the accurate estimation of the net effect of automation or technological advancement on unemployment also requires the in-depth examination of the industry-specific technologies within the specific country and data as well. For example, for generative AI, which has drawn a lot of discussion in 2023, scholars found that many workers in the US (80%) will be somewhat affected (at least 10% of their work tasks) (Eloundou et al., 2023).

Hence it is strongly recommended that organisations, together with the help of government institutions, collaborate on supporting workers, particularly those in sectors that are vulnerable to high automation, to ensure that those who are found to be redundant should have opportunities to be retrained to allow for redeployment within the organisation or be provided with opportunities to transition into other new industries e.g., via available industry career conversion programmes.

For those workers in sectors where industrial robots create more job opportunities, then it would be highly beneficial if employees were provided with upskilling and upgrading avenues so that their skills can complement the nature of their roles in a more technologically reliant workplace. Therefore, it is imperative that policy makers put in place appropriate policy changes that will aid in facilitating these transitions, reduce the social cost of automation and empower employees with the right skill sets to maximise their capabilities and contributions to the labour force.

## Systematic Review of Labour Policies Across Countries

In this section the focus is on the countries that are facing a similar situation of an ageing workforce and the spectre of slowing workforce growth like Singapore, and how they have attempted to tackle this phenomenon. To allow for a focused and more pertinent examination, from across the multiple countries identified in this review, a closer examination and comparison of Singapore's existing legislations and strategies is made with two selected countries, specifically Netherlands and Japan. The Netherlands and Japan were chosen because of their relevance to the research question(s) posed by this project. These countries have faced similar challenges related to ageing populations and workforce dynamics, making them pertinent to our study. The selected countries also share similarities with Singapore in terms of demographic trends, economic development, or labour policies can facilitate a more meaningful comparison. Several key themes were observed as a result and are presented here.

### Skill Enhancement and Workforce Integration

Across Singapore, Japan, and the Netherlands, there is a resounding emphasis on equipping mature workers with skills that enhance their employability and facilitate their continued participation in the labour market. Career guidance programmes and job training underscore a shared commitment to supporting skill development. These initiatives recognise that mature workers bring valuable experience and can remain valuable contributors with up-to-date skills.

The shared emphasis on career guidance programmes and job training in Singapore, Japan, and the Netherlands is best understood through the lens of Hofstede's cultural dimension of "Long-Term Orientation" (Hofstede, 2011). All three countries score relatively high in this dimension, indicating a focus on preparing for the future and valuing persistence and perseverance. This cultural trait drives the commitment to continuous skills development, ensuring the adaptability of mature workers in changing job landscapes.

### Inclusivity and Anti-Discrimination

While absent in Japan, both Singapore and the Netherlands have implemented anti-discrimination policies to eliminate biases related to age in the workplace. These policies promote inclusivity and ensure that mature workers are treated fairly and provided with equal opportunities. Awareness campaigns and outreach programmes in the Netherlands likely support a similar goal of combatting stereotypes and fostering a more inclusive work

environment. Under The Tripartite Guidelines on Fair Employment Practices, Singapore has clear guidelines on non-discriminatory employment, including age discrimination. Employers are expected to avoid age-centric selection criterion unless “bound by legal or regulatory requirements” (Tripartite Alliance for Fair & Progressive Employment Practices (TAFEP), 2019). They are also encouraged to reveal if a job is suitable for mature workers, in alignment with national efforts to improve employment opportunities in mature workers (TAFEP, 2019). The Ministry of Manpower (MOM) will also be rolling out anti-discrimination legislation in 2024 to eliminate workplace discrimination and address unfair treatment at the workplace (MOM, 2023c).

### Health, Well-Being, and Flexible Work Arrangements

Health protection and promotion are integral components of ageing policies in all three countries. This commitment to ensuring the well-being of older citizens reflects a holistic approach that recognises the importance of physical and mental health in maintaining a productive and engaged ageing workforce. In a parallel trajectory, all three nations have also adopted flexible work arrangements and reduced working hours, recognising the evolving preferences of mature workers.

### Retirement/Pension Reforms

All three countries have tackled the issue of early workforce exits driven by retirement and pension benefits. They've enacted pension reforms, often coupled with raising the retirement age. This comprehensive strategy discourages premature retirement and encourages older employees to remain in the workforce, thereby enhancing overall employment rates.

### Entrepreneurship and Self-Employment

Japan and the Netherlands provide financial support for self-employment, acknowledging the entrepreneurial potential of older individuals. This approach encourages senior workers to participate in productive economic endeavours beyond traditional employment, thereby contributing to overall economic growth. Notably, both Japan and the Netherlands exhibit relatively high scores in individualism, which underscores the significance of individual rights. Within these individualistic societies, policies promoting self-employment align seamlessly with values of personal autonomy and the pursuit of personal accomplishments. The emphasis on individual rights and aspirations propels these nations to facilitate opportunities for older individuals to explore entrepreneurial pursuits, leveraging their expertise and fostering economic diversity.

In contrast, Singapore, characterised by its strong collectivistic culture that centres around group interests, adopts a distinct approach. Here, the ageing workforce is encouraged to integrate and contribute to the larger societal unit rather than opting for self-employment. The policy landscape reflects a collective orientation, prioritising cooperative efforts that strengthen the overall social fabric. This intricate interplay between cultural values and policy choices highlights the diverse strategies employed by

these nations to address the challenges posed by ageing populations while staying true to their cultural dispositions.

### Reliance on Foreign Labour

Singapore, Japan, and the Netherlands employ diverse strategies to manage their ageing workforces and balance the integration of foreign labour while minimising social costs. From the above analysis, we can infer that Singapore's approach centres on wage benchmarks and comprehensive assessment frameworks, while Japan leans towards a more restrictive approach with limited pathways, and the Netherlands emphasises stringent criteria and prioritisation of highly skilled migrants. These approaches reflect the unique socio-economic contexts and policy priorities of each country.

## Returning to the Labour Force: Leveraging Mature Workers and Women with Caregiving Duties

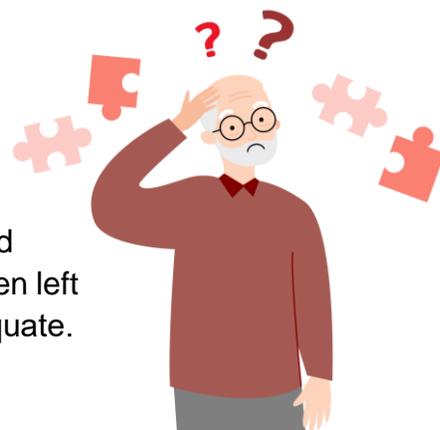
### Actual and Perceived Barriers to Finding Employment and Staying in Employment

#### **Theme 1: Limited and Unequal Access to Employment**

Although the Fair Consideration Framework (FCF) (MOM, 2023b) sets out the requirements to ensure companies abide by fair hiring practices, participants mentioned that they still encountered discriminatory HR practices. One of the most mentioned actual barriers faced by mature workers was the difficulty in finding a job due to their age. Participants shared that it may be due to the stereotypes that mature workers “of a certain age cannot be retrained or un-coachable, cannot be re-integrated”. For those with caregiving duties, especially when they have long periods of unemployment to look after their children or elderly parents, re-entry to the workforce was a challenge. The negative perceptions many potential employers have on long periods of unemployment made it even more challenging. Potential employers perceive the period of unemployment as career stagnation and consider the unemployment gap to be a disconnection with the industry. Participants also shared that potential employers tend to see the demands of caregiving as a hindrance to their dedication to their job and performance.

#### **Theme 2: Skills Gap Barriers**

Despite upskilling efforts, many of the mature workers still face difficulties in finding employment as the knowledge that they have acquired through the training was too basic. Especially for new processes and new technologies, mature workers felt that they were often left to figure things out on their own as the training is inadequate.



### **Theme 3: Balancing Personal Commitment and Professional Demands**

For participants with caregiving duties, they shared the struggle that they faced while simultaneously attending to their caregiving responsibilities and staying in employment. Participants shared they had to shift to part-time employment as they needed to devote more time to caregiving as they have no additional help (e.g., being the only child to elderly parents) or were unable to find alternative caregiving arrangements (e.g., infant care). Participants also expressed that they experienced inner conflict with themselves as they juggle to fulfil their role as a mother while trying to maintain a successful career.

## Perceived Facilitators for Finding Employment and Staying in Employment

### **Theme 1: Staying Relevant**

Participants expressed that the success rate of finding employment also depends on whether one has the relevant skillsets that are required by the market. Participants also highlighted that having a strong professional network opens doors to job opportunities as they have higher chance of getting employed through referrals and connections. Some of the mature workers highlighted that as many mature workers tend to hold higher positions in the past, it is important to recalibrate their expectations. For example, adjusting to new employment which may be of a lower position or gig work as well as being open to learning would help mature workers to keep up with the industry trends and stay in employment.

### **Theme 2: Flexibility as a Workplace Norm**

Many of the participants shared that they appreciate the flexibility that their organisations have provided for them in terms of *spatial flexibility* and *temporal flexibility*. This was important for both mature workers and women with caregiving duties as many participants shared that the flexibility provided allowed them to attend to their personal matters and commitments such as medical appointments and caregiving responsibilities. For both mature workers and women with caregiving duties, having flexibility in their job was also one of the most mentioned factors that they look for in a job.

### **Theme 3: A Workplace Culture of Respect and Empathy**

For mature workers, it was also important for them to be in an age-inclusive work culture where they are respected for their experiences in the organisation. Many of the participants perceived the flexibility at work to be largely enabled by their supervisors. Participants shared how their supervisors were empathetic to their individual circumstances and trusted them to get their work done without micro-managing them. A work culture that is caring towards its employees and promotes work-life balance was mentioned to be important facilitators of staying in employment.

## Desired Support for Mature Workers and Women with Caregiving Duties

### ***Theme 1: Promoting an Inclusive Society***

As highlighted in the earlier section, mature workers faced hiring bias and age discrimination. Participants hoped more could be done in ensuring mature workers receive equal opportunities and have a more transparent hiring process. Some of the participants highlighted that they hope for their colleagues to be more empathetic to their circumstances and understand the struggles they have as a caregiver. Participants suggested that such understanding can be fostered through various HR initiatives such as “Bring your loved ones to work”, caregiving workshops, and home visits.

### ***Theme 2: Bridging the Gap Between Skills Acquisition and Employment***

While participants shared that they have benefited from the SkillsFuture initiative, one of the most cited issues was the difficulty in finding employment even after their course completion. Participants suggested that training providers should not only signpost them to potential employers but also collaborate with industry partners to offer internship opportunities. Such internship opportunities provide a platform for them to apply their knowledge to real-world practical settings.

### ***Theme 3: Implementing Needs-Specific HR Policies and Support***

Many of the mature workers highlighted their preference for part-time jobs as they prefer flexibility and that it is less stressful. Given the different needs, participants suggested that organisations explore part-time or freelance gigs. One participant shared her observation of ‘job sharing’ practices which provide employment opportunities for mature workers.

In terms of healthcare benefits, mature workers hope for organisations to organise more health talks, subsidised health screening packages, and to provide funds for them where they could purchase health supplements. For those with caregiving duties, they have suggested that such benefits extend beyond their spouse and dependents (e.g., parents, grandparents). By providing such health benefits, it adopts a preventive approach to help them stay healthy.

Participants shared they hoped to see improvement in the leave systems that could recognise the demands of caregiving and able to better accommodate employees who need to take time off to take care of their children or parents. For example, participants have suggested that parental care or family care leave be compulsory for all organisations to adopt and for family care leave to not have an age restriction.

In terms of training, participants suggested that organisations assign them a buddy to help them learn new processes and technology. They also preferred more hands-on training and guidance from their colleagues instead of didactic teaching.

Participants shared the importance of HR to engage mature workers in their career planning and retirement plans. Participants agreed that HR professionals would need to be trained in coaching to help mature workers identify the skills they need to stay relevant and have conversation with employees on their retirement plans, ideally 5 years before their retirement age.

## Policy Recommendations for the Labour Movement

The impending slowing labour force growth will have ramifications for the way organisations conduct their work processes. The labour force projections have shown us that the employment and economic outlook is expected to recover in the coming years. Coupled with the prospect of increased automation in the workplace, it is likely that most companies will increase their employment intake but possibly be more selective in hiring candidates with some level of competency in digital skills to complement the changes in work procedures. Interestingly, our analysis on automation suggests that the adaptation of robots and an uptake of automation in the workplace will affect both the youth, women, and mature workers equally. It is therefore imperative they are equipped with necessary digital and technological skills to remain relevant and productive in a technologically enhanced society.

The Labour Movement may wish to consider gearing their initiatives and position themselves to championing for a more integrated workforce whereby mature workers, youths and women with caregiving duties are adequately supported in ensuring their assimilation into a technologically advanced workplace. As the current position taken by the Labour Movement is directed heavily towards re-employment of mature workers through upgrading and upskilling programmes, it can further extend their efforts towards opportunities for workers to apply their skills in the real-world situation where organisational demands may differ from a training environment, as well as consider shifting the nature of job applications from online platforms to social networking.



## Chapter 1: Background

Many countries are experiencing the phenomenon of an ageing population, and we are observing an unprecedented trend in the global population; people 65 years old and above are outnumbering children younger than 5 years old (United Nations, 2019a). By 2050, more than 1.5 billion people around the world will be aged 65 years and above (United Nations, 2019b). Singapore is no exception. Population ageing and its impact on the labour force have been anticipated but have more recently come under the spotlight (Ministry of Finance [MOF], 2023; Seow, 2016). Provisions were made, this year during Budget 2023, to acknowledge the value of mature workers as well as to offer them support to stay in the workforce longer. Nevertheless, research has shown that demographic factors will eventually influence labour market functions, how businesses operate, the types of employment and the implementation of new policies to ensure sustainability (OECD, 2020). All of which have implications for the society at large.

Singapore's workforce is ageing, and this will continue throughout the twenty-first century. The median age of Singapore's resident population has increased from 37.4 years to 41.5 across the decennial census years 2010 and 2020 (Singapore Department of Statistics (SDOS), 2021). The drivers for this development being the country's ultra-low fertility coupled with improving life expectancy at the older end of the age spectrum. In addition, with smaller birth cohorts being the norm over the last few decades, it has also contributed to a decline in the number of young people entering the labour force. In fact, the proportion of persons aged 55 and older in the Singaporean labour force has increased from 19% (2012) to 27% (2022) (Ministry of Manpower (MOM), 2023a). Looking ahead and with the expectation that this demographic trend is unlikely to change, this would mean that in time the Singapore workforce for most sectors of the economy will be older and without the possibility of replacement by the local population. In short, the workforce in most sectors may begin to shrink.

Although there has been increasing interest in the subject matter of an ageing workforce, few have examined the implications it has at the industry-level, and on specific interventions aimed at alleviating its impact, especially in Singapore's context. This study first analyses past trends and projects future industry-specific labour supply, namely the manufacturing, construction, and services industries. In a study conducted by Fuei (2017), it is revealed that an estimate 25 percent of Singapore's labour force will face computerisation, and this will have a significant impact on the services sector, particularly on mature workers aged 50 and above. Currently in Singapore, the following industries with very high incidence of mature workers aged 55 and older are "Cleaning & Landscaping" and "Land Transport & Supporting Services" (MOM, 2020). Thus, there is an urgent need to consider how Singapore can create a more age-inclusive and supportive environment that will allow the ageing workforce to continue contributing effectively and more importantly, maximise the available labour pool to propel the economy.

To first provide a context to how countries have been dealing with their ageing population, we offer an overview of organisational strategies, emphasising each country-specific context using a content analysis approach. A unique way of supplementing the labour pool as discovered by Loichinger and Cheng (2018) is to increase female participation in the workforce. Although women could potentially cushion the reduced manpower supply in the workforce, their participation would most likely be contingent on a long-term change in attitudes towards women in the paid labour market as well as a subversion of the traditional role of women as a caregiver in the family. Section 5 of this paper highlights the concerns and challenges faced by both mature workers and women with caregiving duties. It also explores the themes and types of initiatives necessary to increase the economic activity of women by removing some of the barriers faced by women who want to return to the workforce but are struggling to do so. For instance, in Japan, tax policies are largely designed against female employment, and tend to favour the traditional male-breadwinner-female-housekeeper type of labour division (Yoon, 2015). A 2017 study conducted in China found that intensive caregiving duties on women result in a “double burden” where a combination of caregiving duties and their work responsibilities make it more difficult for them to remain in their jobs and they were less likely to be employed (Chen et. al., 2017).

Finally, based on the analyses and comparisons from the different study elements, we propose possible policy suggestions that can be considered to support mature workers and women in securing employment and create an environment that is not only able to accommodate the shifting dynamics of the labour force, but also leverages and maximises the contributions of an ageing workforce.



## Chapter 2: Research Questions and Outcomes

With the demographic shifts shaping the profile of the local labour force, the government in consultation with tripartite partners, adopted a proactive approach and moved to increase the retirement and reemployment ages to 63 and 68 respectively with effect from 1 July 2022; by 2030, it would be further raised to 65 and 70 years respectively (MOM, 2022). Even with these developments questions remain—how can businesses better prepare for this eventuality? What industries are likely to see more mature workers in their midst in the years ahead? Will an ageing workforce be a boon or bane for the Singapore economy?

This research study thus attempts to address the following research questions:

1. How would the future industry-specific labour force profile look like for the Singapore economy as its resident population ages?
2. What are the implications of an ageing workforce for different industries?
3. What are the perceived and actual barriers and facilitators to staying in work for women with caregiving duties and mature workers?
4. What are the policies and practices to plan, recruit, retain, and develop employees to address an ageing workforce?
5. What are the challenges that accompany an ageing workforce and are there ways to cushion the negative impact?
  - a. Can the foreign workforce cushion the impact of an ageing workforce while at the same time complementing the Singapore Core and minimising the social costs to Singaporeans?
  - b. What are the challenges that have happened and what are the effective strategies for these challenges in other countries?
6. What policy suggestions can NTUC offer considering an ageing and slowing workforce growth?
  - a. What are the tangible recommendations that the Labour Movement can implement, to alleviate the impact of slowing workforce growth and better support a multi-generational workforce?

In addressing these research questions, the study seeks to achieve the following key outcomes:

1. Identify key manpower strategies to mitigate impact of slowing workforce growth in Singapore and evaluate the efficacy of these measures.
2. Develop a targeted sectoral and national support in navigating slowing workforce growth.
3. Help shape NTUC's positions and strategies in workforce related policies (i.e., retirement age, foreign manpower policy etc).

To allow for easy navigation and cross-referencing the different components of this study, Table 1 presents an overview regarding how each study element presented in this report is aligned with the research questions presented above.

Table 1: Report Guide

	Study Element(s)					
	Projections	Automation & Systematic Review of Labour Policies Across Countries (content analysis)	FGDs	HR interviews	Quantitative Survey	Policy recommendations
<b>Research Question(s)</b>						
1. How would the future industry-specific labour force profile look like for the Singapore economy as its resident population ages?	✓					
2. What are the implications of an ageing workforce for different industries?		✓				
3. What are the perceived and actual barriers and facilitators to staying in work for women with caregiving duties and mature workers?			✓		✓	
4. What are the policies and practices to plan, recruit, retain, and develop employees to address an ageing workforce?				✓	✓	
5. What are the challenges that accompany an ageing workforce and are there ways to				✓	✓	

cushion the negative impact?						
5a. Can the foreign workforce cushion the impact of an ageing workforce while at the same time complementing the Singapore Core and minimising the social costs to Singaporeans?		✓				
5b. What are the challenges that have happened and what are the effective strategies for these challenges in other countries?		✓				
6. What policy suggestions can NTUC offer considering an ageing and slowing workforce growth?			✓		✓	
6a. What are the tangible recommendations that the Labour Movement can implement, to alleviate the impact of slowing workforce growth and better support a multi-generational workforce?						✓



## Chapter 3: Future Labour Force Projections

In addressing the challenges posed by an ageing workforce in Singapore, it is pertinent to understand the current and future trends of the labour market. For this purpose, forecasting methods are employed to project changes in the workforce composition. Specifically, we construct labour force projections using quarterly data related to the labour market from *data.gov.sg* and the Department of Statistics, Singapore. These labour force projections are based on two types of univariate time series models—artificial neural network autoregression (NNAR) with or without external covariates. We consider an NNAR model where the labour market indicator depends on past information either arising from its past variations or past variations of the external covariates. The use of lagged labour market indicator or external covariates as predictors enable lagged information to have predictive power on the future values of the labour market indicator, which we seek to project. The Consumer Price Index (CPI) inflation, growth in the Gross Domestic Product (GDP), and growth in value-added per worker (all defined as quarterly growth) are treated as external covariates, as they are general indicators of price levels, output levels, and worker productivity in Singapore.

In the next section, we present a forecast generated by the NNAR model for various labour market indicators for 20 quarters ahead (i.e., 5 years ahead). Section 3.1 discusses the data sources and explores the labour market indicators considered in this analysis. Section 3.2 presents forecasted values of the labour market indicators by way of data visualisation. A more detailed technical discussion of the forecasting model is available in Appendix C.

### 3.1 Data

The data for the analyses in this section were obtained from *data.gov.sg* and the Singapore Department of Statistics (SDOS). We use variables where quarterly data are available, as the use of quarterly data (as opposed to annual data) provides a larger sample size to accommodate more complex forecasting model specifications (such as having longer lags and the use of lagged covariates).

We also obtained recently updated data. For instance, variables such as “Workers Made Redundant, Annual” and “Resident Labour Force Aged 15 Years” were last updated in 2017. As such, although they are related to the labour market, we cannot construct projections for them. For the labour market time series indicators, we employ the following:

- Job Vacancy to Unemployed Person Ratio
- Employment Change by Industry, Quarterly (in Thousands)
- Retrenched Employees by Industry Group
- Job Vacancy by Industry Group
- Unemployment Rate (End of Period)

Besides labour market variables, we used external covariates to improve our forecast. The external variables should be broad indicators of the economy. These include:

- Consumer Price Index (CPI)
- Gross Domestic Product (GDP) At Current Prices, by Industry
- Value Added Per Worker in Chained (2015) Dollars, by Industry

Our first external covariate is the CPI a general indicator of price in Singapore. Our second external covariate is the GDP at current prices, which indicates the amount of output produced within Singapore. We use nominal GDP at current prices, as opposed to real GDP, as it is directly provided by the SDOS data portal. As the purpose of the external covariates is to improve the predictive abilities of the forecasting model and are themselves not our focus, we will use what is directly provided. Finally, our third external covariate is the value added per worker. Since our study focuses on the labour market, we may think about this covariate as capturing the general productivity of workers in Singapore. Instead of using the external covariates in levels, we transformed them using log differencing. This allows our external covariates to capture CPI inflation, growth in value added per worker, and GDP growth. Besides the fact that it is easier to interpret these variables in terms of growth, there is also clear evidence (based on the KPSS test) that they are non-stationary in levels and should be converted into first differences.<sup>1</sup>

To train the forecasting model, all available data for the labour market indicators are used. The end date of the dataset is based on the latest data point available from data.gov.sg obtained via its Application Programming Interface (API) As an exploratory analysis, we plot several labour market time series below, which include job vacancy to unemployment (Figure 1), employment change by sector (Figure 2), retrenched employees by industry (Figure 3), job vacancy by industry (Figure 4), and the unemployment rate (Figure 5). We overlay grey ribbons to indicate the technical recession periods corresponding to the 2009 Global Financial Crisis (GFC) and the 2020 COVID-19 pandemic on all the figures shown here.

First, relative to unemployment, job vacancies declined significantly during the Global Financial Crisis (GFC) and the COVID-19 pandemic (see Figure 1). These trends were mirrored by a reduction in employment, an increase in retrenchment, and an increase in the unemployment rate during similar periods.

Next, among the sectors (manufacturing, construction, and services), the services industry suffered the greatest decline in employment, where employment levels fell by more than 150 thousand (see Figure 2). The services industry also experienced the greatest increase in the number of retrenchments during the COVID-19 pandemic, which shows that the sector is especially vulnerable to negative business cycle shocks (see Figure 3). Interestingly, after the GFC, vacancies in the services industry have been

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<sup>1</sup> The KPSS test, named after Kwiatkowski, Phillips, Schmidt, Shin (1992), is a test of stationarity in a time series, with a null hypothesis that a univariate time series is trend stationary, against the alternative that it is non-stationary.

increasing steadily, suggesting Singapore's gradual shift towards the services industry. The increase in the demand for service labour is also especially prominent after the pandemic, as evidenced by the doubling of vacancies in the industry (see Figure 4).

Finally, prior to the COVID-19 pandemic, the unemployment rate was mostly below the long-term average (see Figure 5). The pandemic had caused unemployment to increase sharply, although there are signs of a quick recovery in employment after the pandemic.

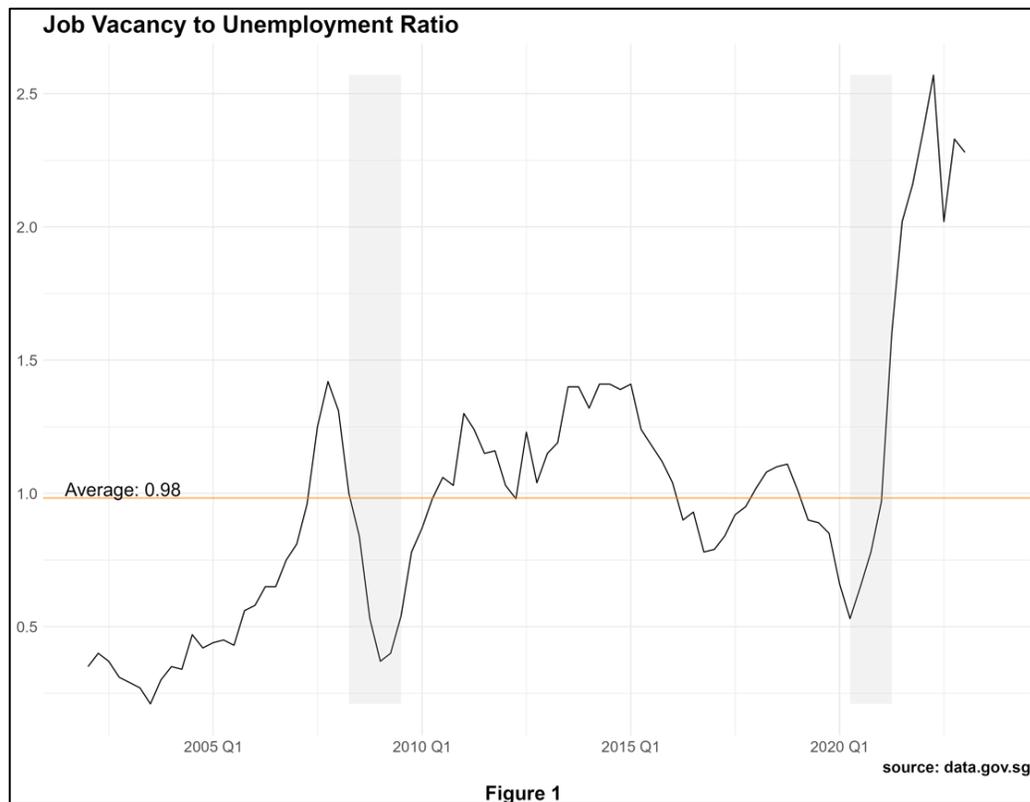


Figure 1

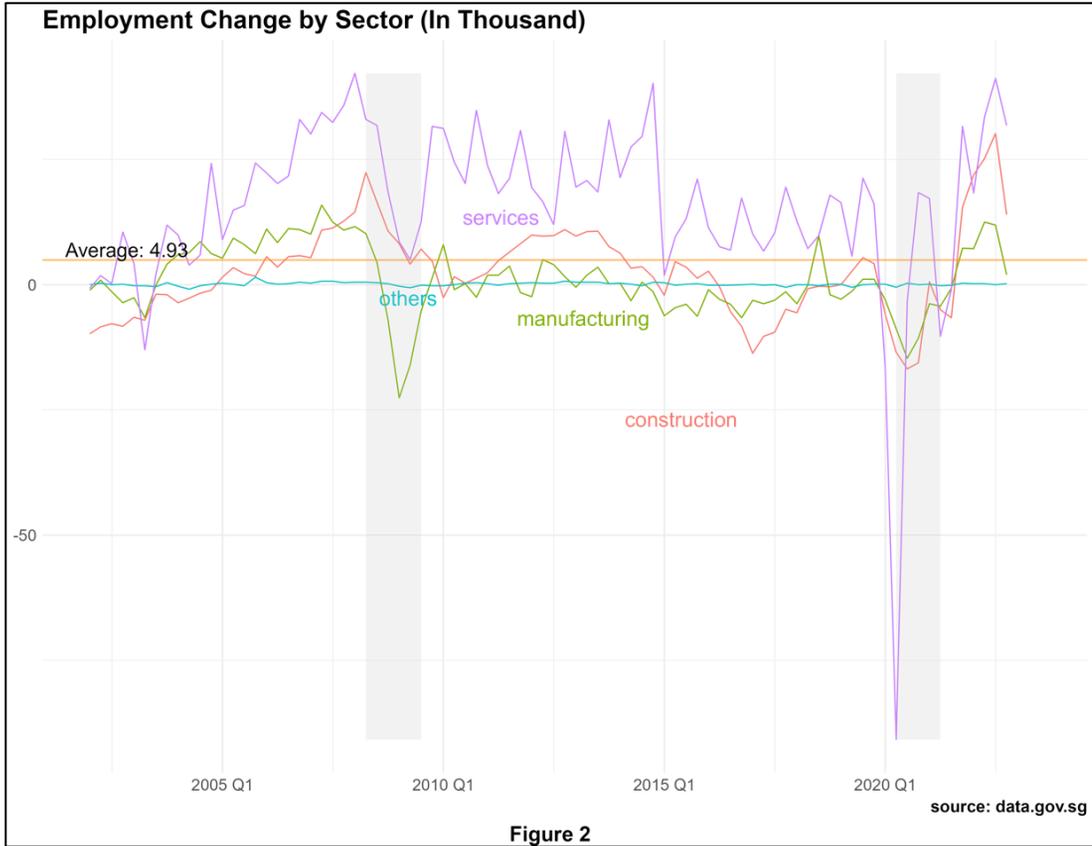


Figure 2

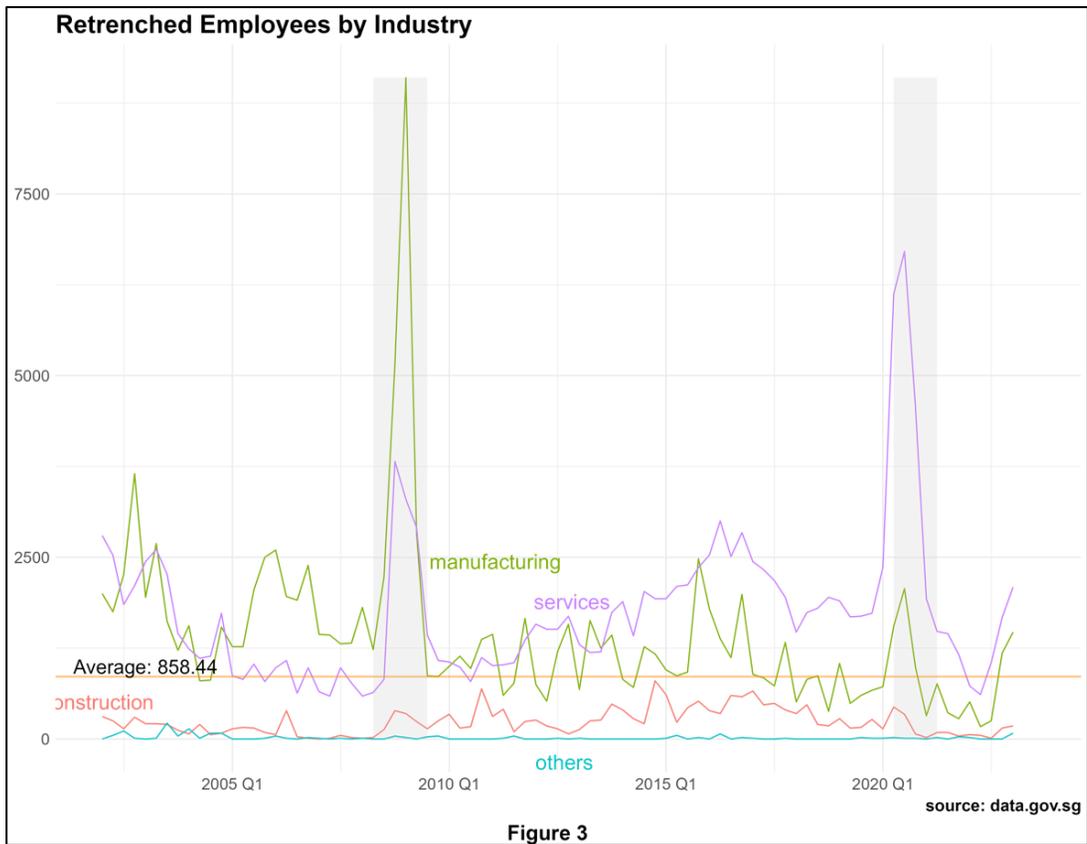
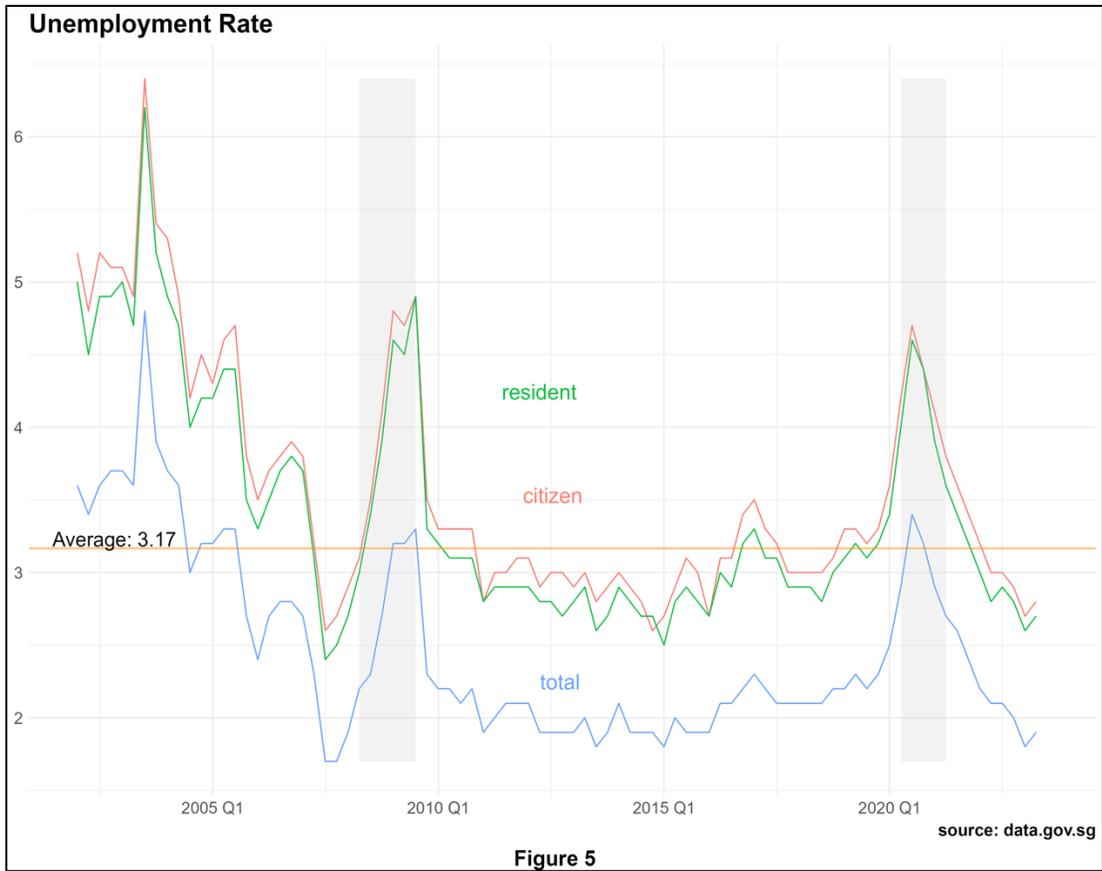
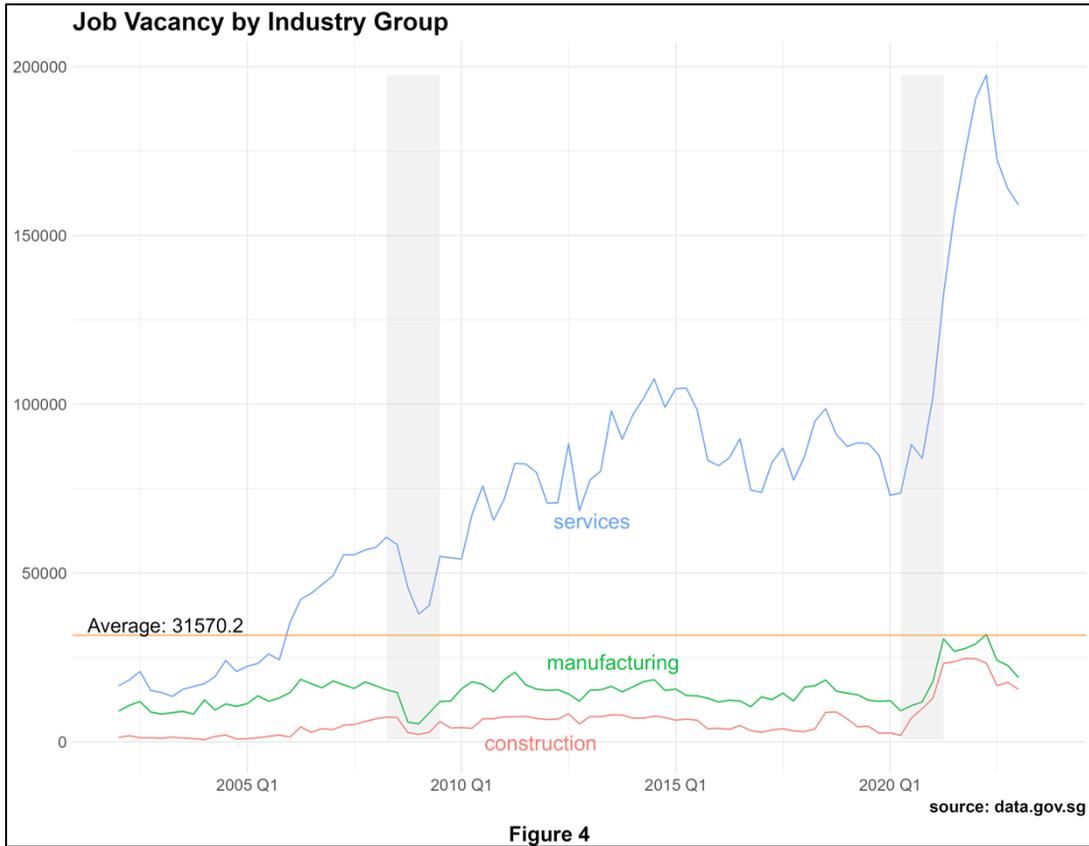


Figure 3



## 3.2 Results

In the figures below (Figures 6 to 18), we plot the historical and forecasted values of the labour market indicators. A 20 quarter-ahead (i.e., 5 year-ahead) forecast is constructed and plotted as a dash line. As the last data point for the labour market indicators vary at different dates, the end date of the available data series is shown in the figures above the vertical dotted line. The lightly shaded area surrounding the forecasted series represents the 95% confidence bands. We may interpret these confidence bands as showing the best- and worst-case scenarios for the forecast. For each regression model, we present two plots — one that presents the forecast of the labour market indicator using a model without external covariates, and another that presents the forecast of the same variable using a model with external covariates. Unsurprisingly, with external covariates, the confidence bands tend to be narrower, as the model is estimated by drawing information from the economy such as GDP growth, inflation, and value added per worker growth.

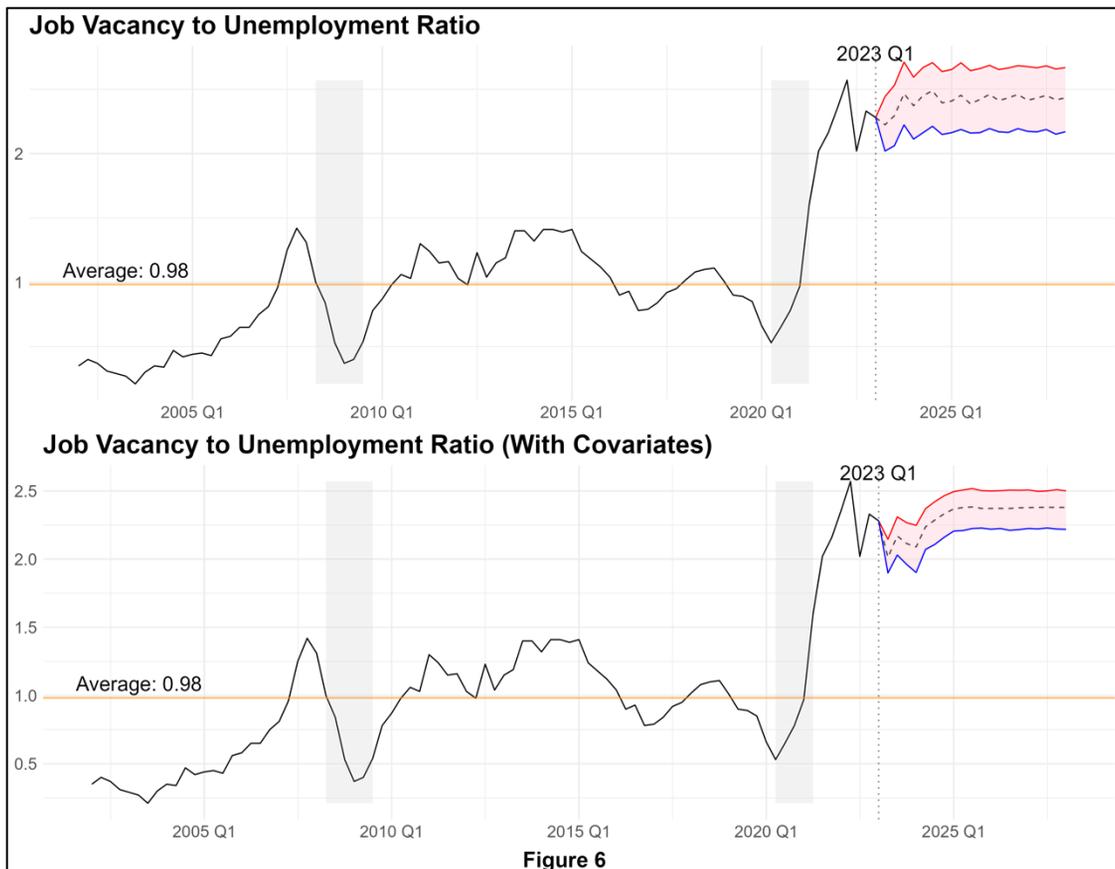
The results are presented in two subsections — forecasts of the aggregate indicators are presented in Section 3.2.1, and the forecast of the industry-level (i.e., manufacturing, construction, services) indicators are presented in Section 3.2.2. The indicators considered in this analysis represent the general labour force in Singapore and across industries. They do not reflect age-cohorts, and therefore, are not specific to the ageing workforce.

### 3.2.1 Forecast of Aggregate Indicators

#### Job Vacancy to Unemployment Ratio

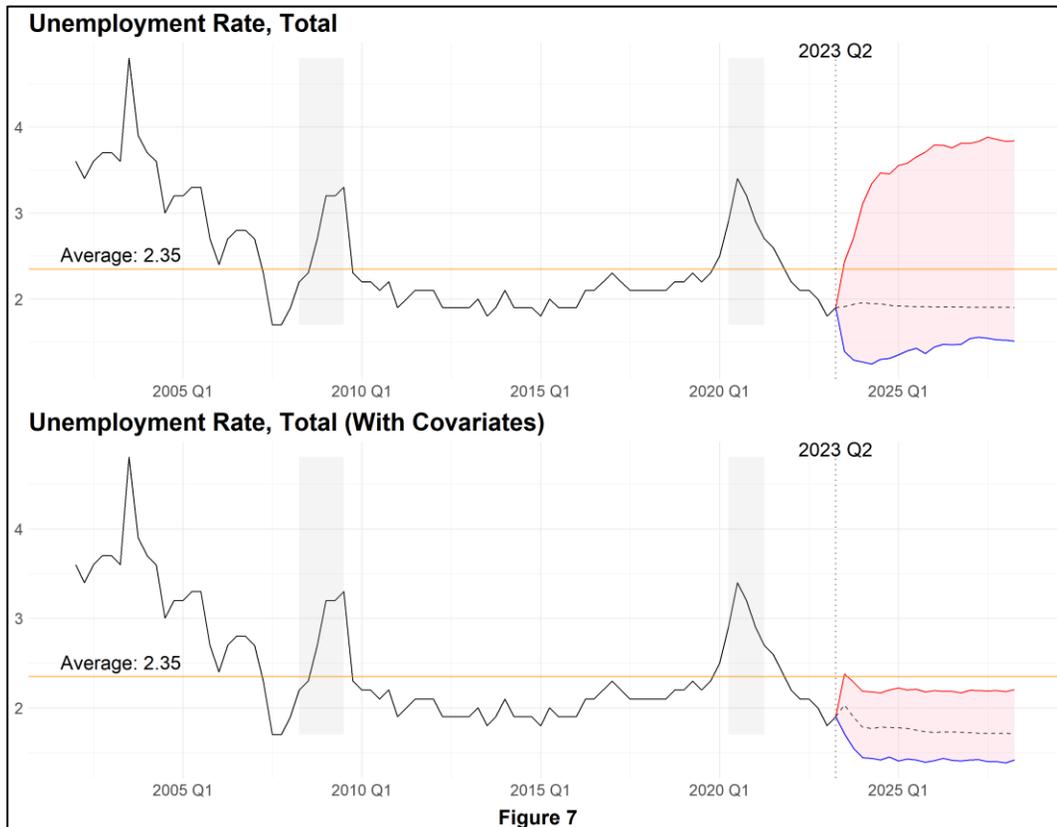
Figure 6 plots the historical and forecast of the job vacancy to unemployment ratio. The ratio started to decline in the second quarter of 2020, reflecting the impact of the pandemic and the circuit breaker. However, beyond 2022, the model forecasts that the job vacancy to unemployment ratio will significantly be greater than the mean ratio of 0.88 over the past 20 years. Therefore, a tightening of the labour market is likely to occur within the next five years. The implication is that we should expect to see a steady economy recovery within this forecasted period.

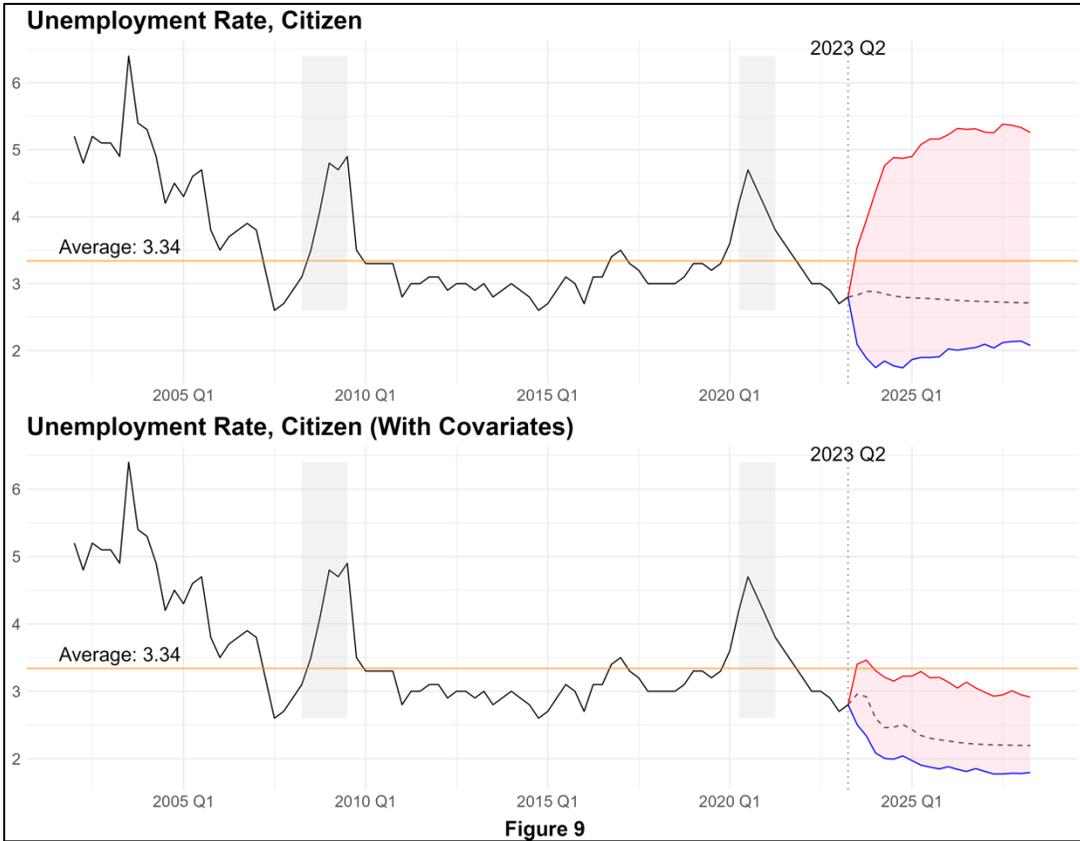
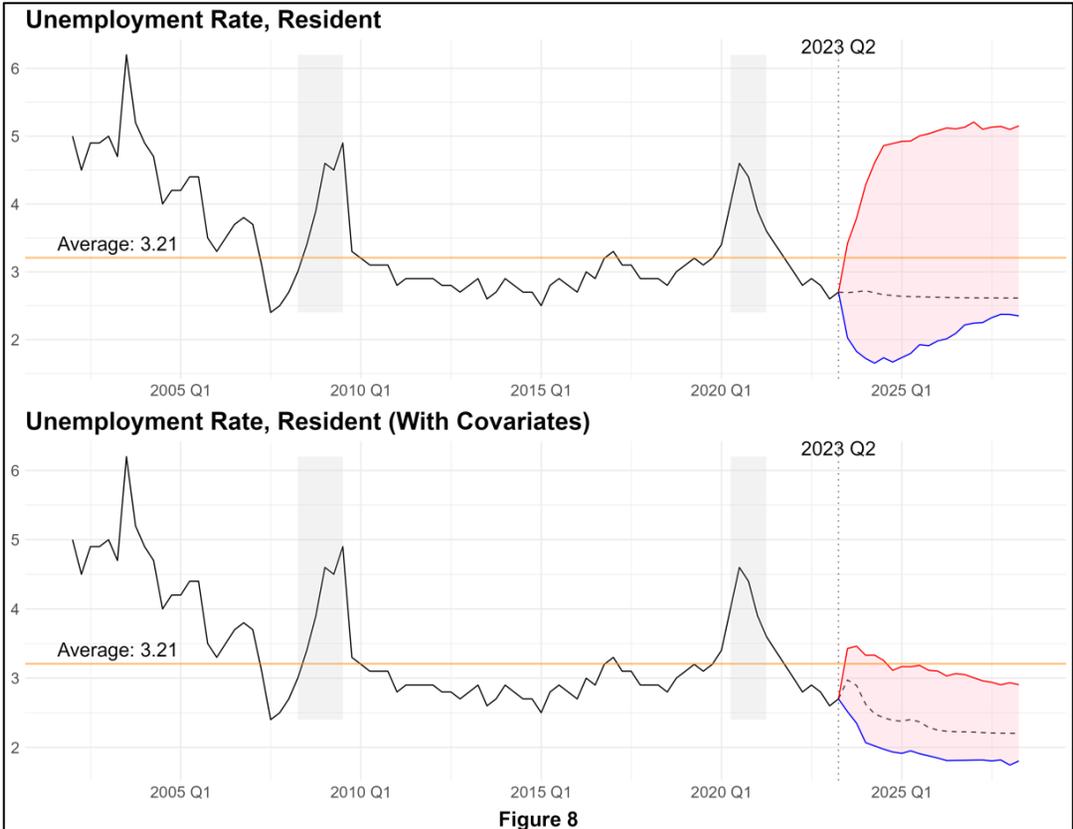




## Unemployment

Figures 7, 8 and 9 plot the total, resident, and citizens unemployment rates, respectively. The total unemployment rate saw a sharp rise during the pandemic, although its peak was significantly lower than what was recorded during the Global Financial Crisis. The citizens unemployment rate was slightly higher than the resident unemployment rate during the COVID-19 pandemic, although the unemployment rates of both groups are expected to decrease below their respective long-term averages in the next five years.



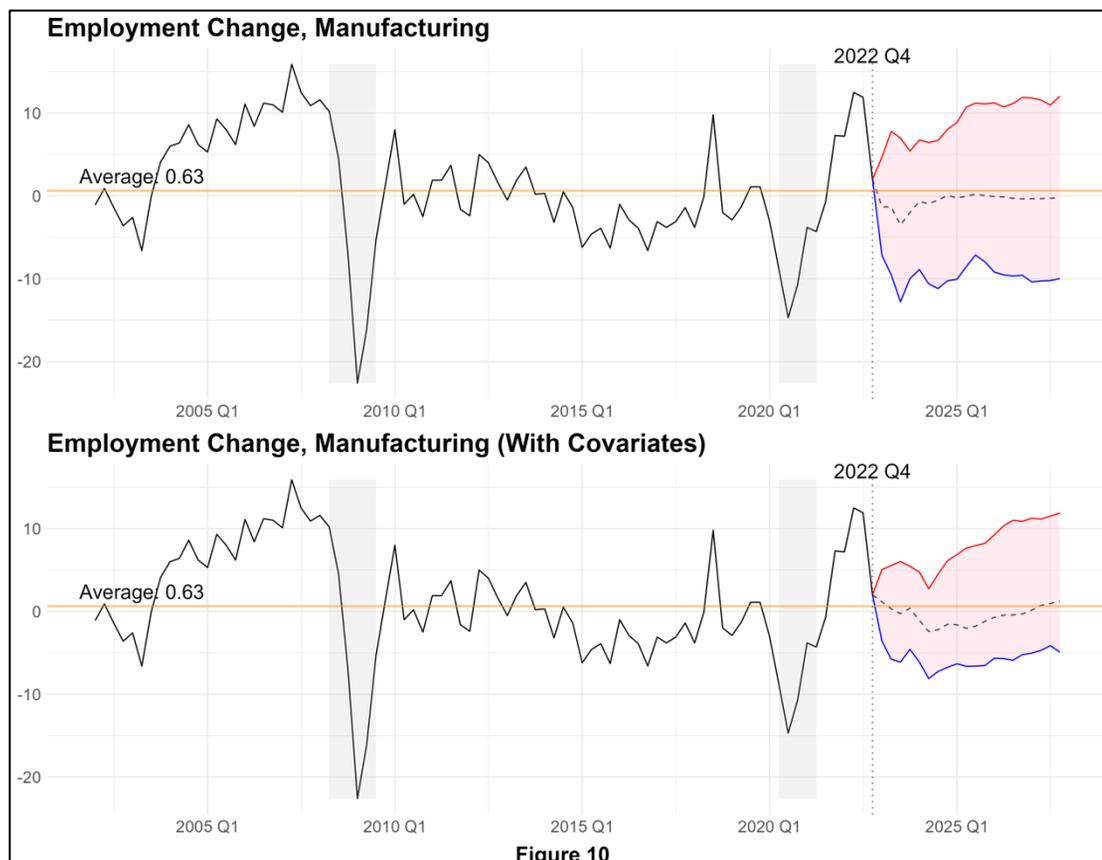


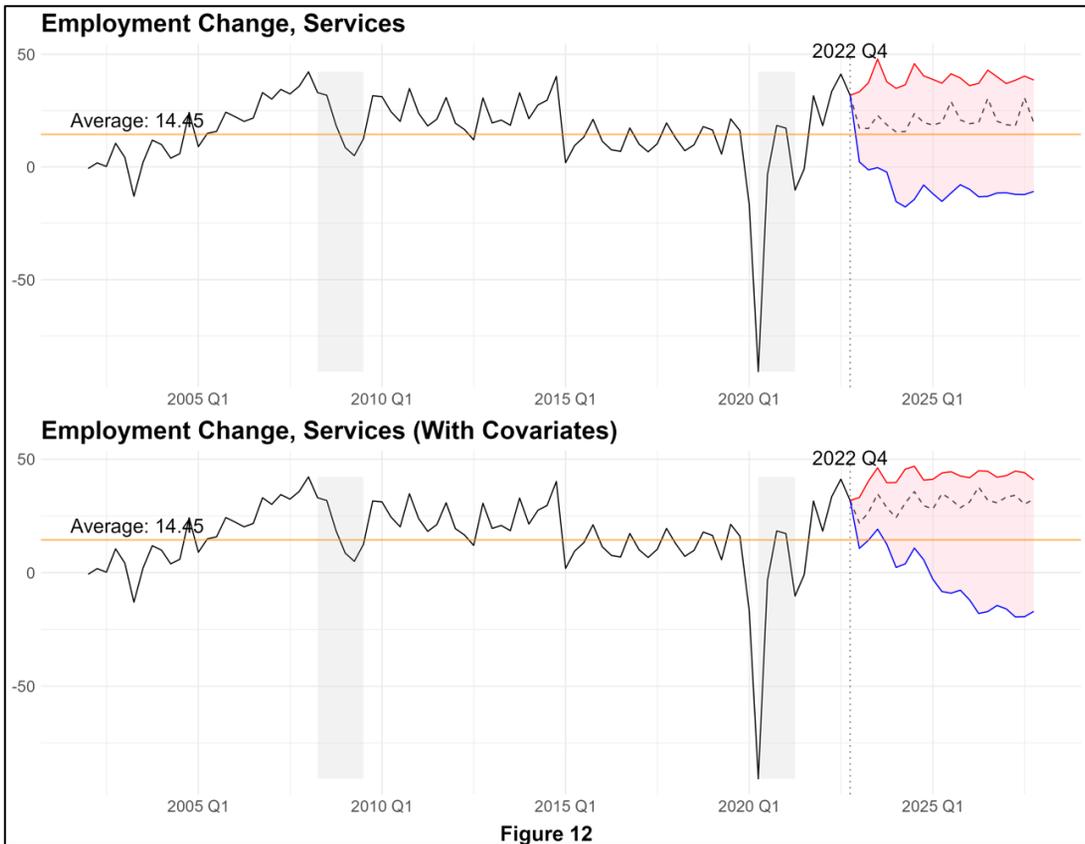
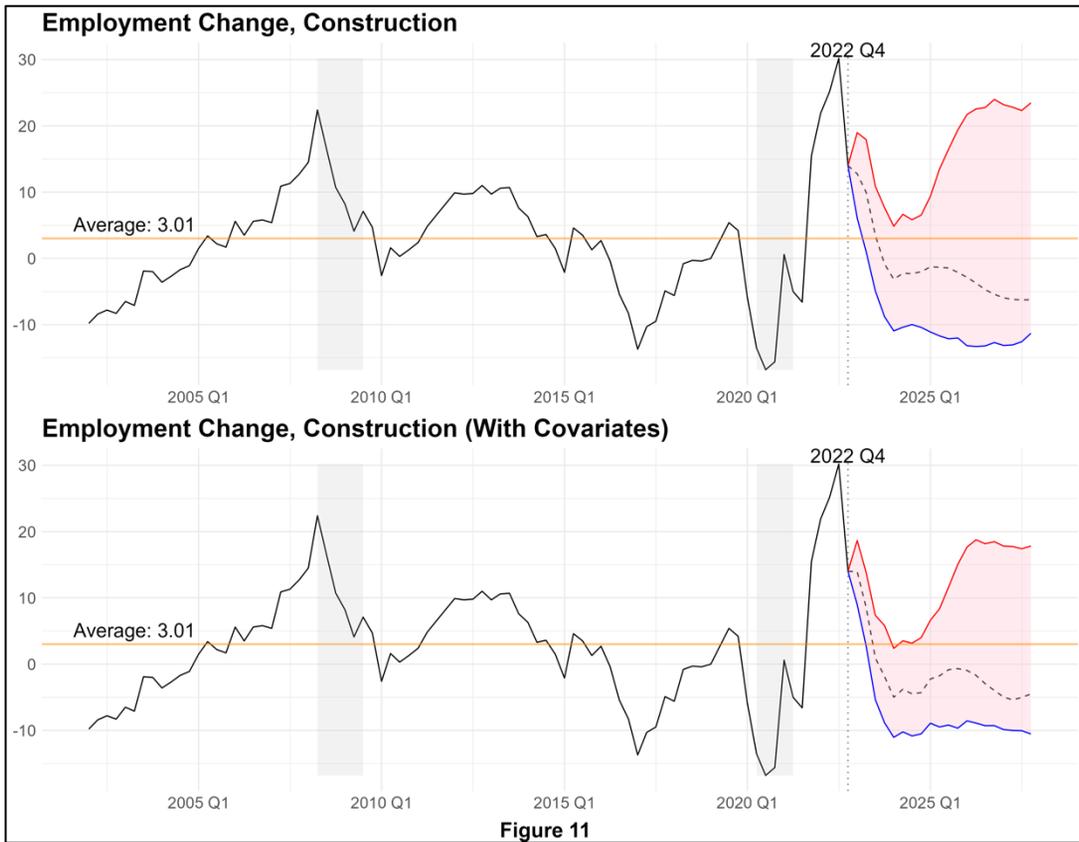
### 3.2.2 Industry-Level Forecast

#### Employment Change

Figures 10, 11 and 12 plot the change in employment, in thousands, for the manufacturing, construction and services industries, respectively. First, Figure 10 shows that manufacturing employment growth has remained small over the last twenty years, where the average employment change in the sector per quarter is 0.63 thousand (i.e., 630 per year). By contrast, Figure 12 shows that the services industry has added many positions, where the average quarterly employment increase in the sector is 14.45 thousand. The average quarterly employment change in the construction sector lies between the manufacturing and services sectors, where 3.01 thousand positions are added per quarter on average.

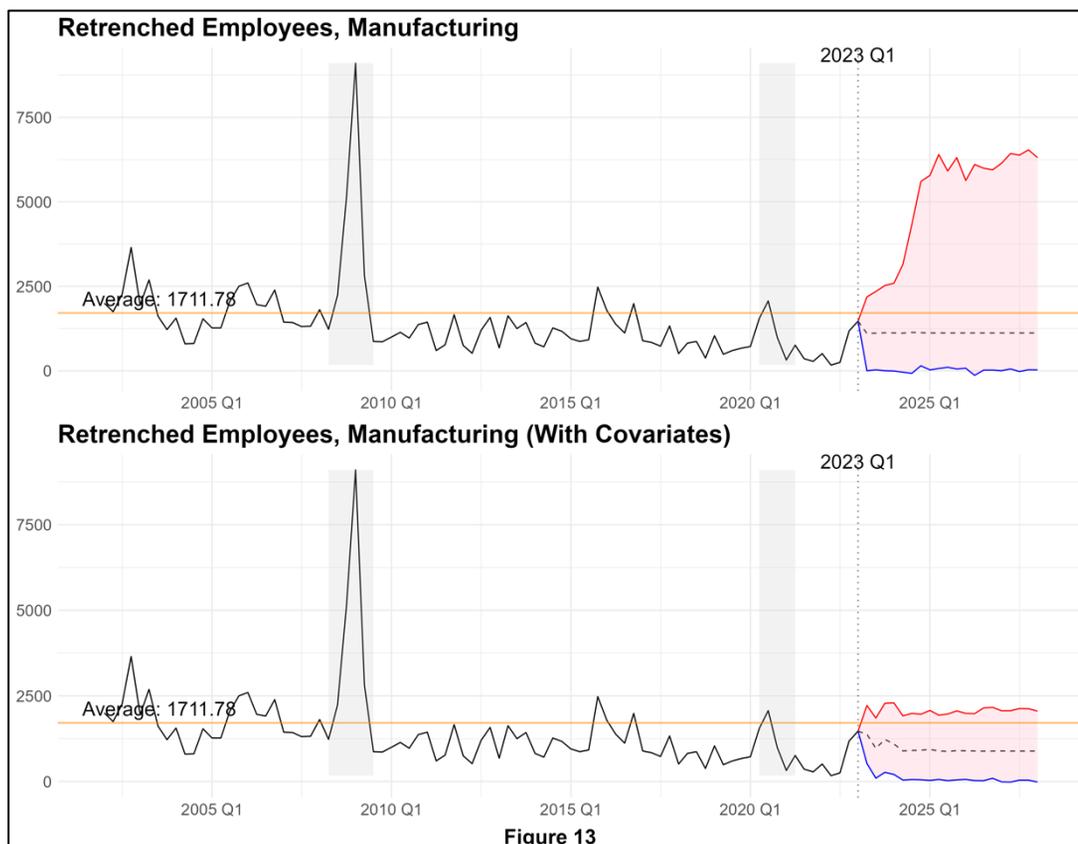
During the COVID-19 pandemic, the services industry experienced the sharpest decline in employment, where more than 150 thousand jobs were lost. The employment forecast for the services industry is slightly positive, where service employment change will return to the pre-2015 trends. By contrast, the employment forecast for the manufacturing industry is less optimistic. Both models (with and without covariates) suggest that manufacturing employment change will dip below the long-term average and remain sluggish over the next 5 years. The employment forecast for the construction industry is the most bearish of the three sectors. By 2024, construction employment is expected to shrink and remain sluggish over the next five years.

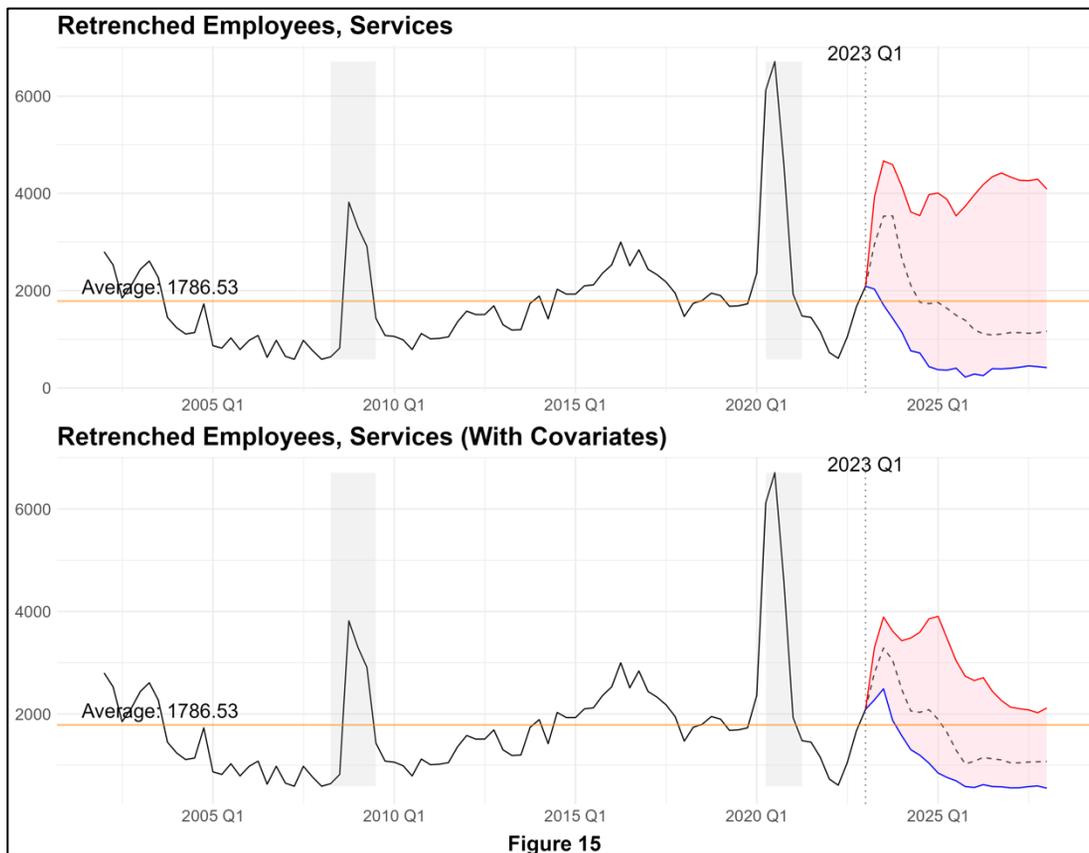
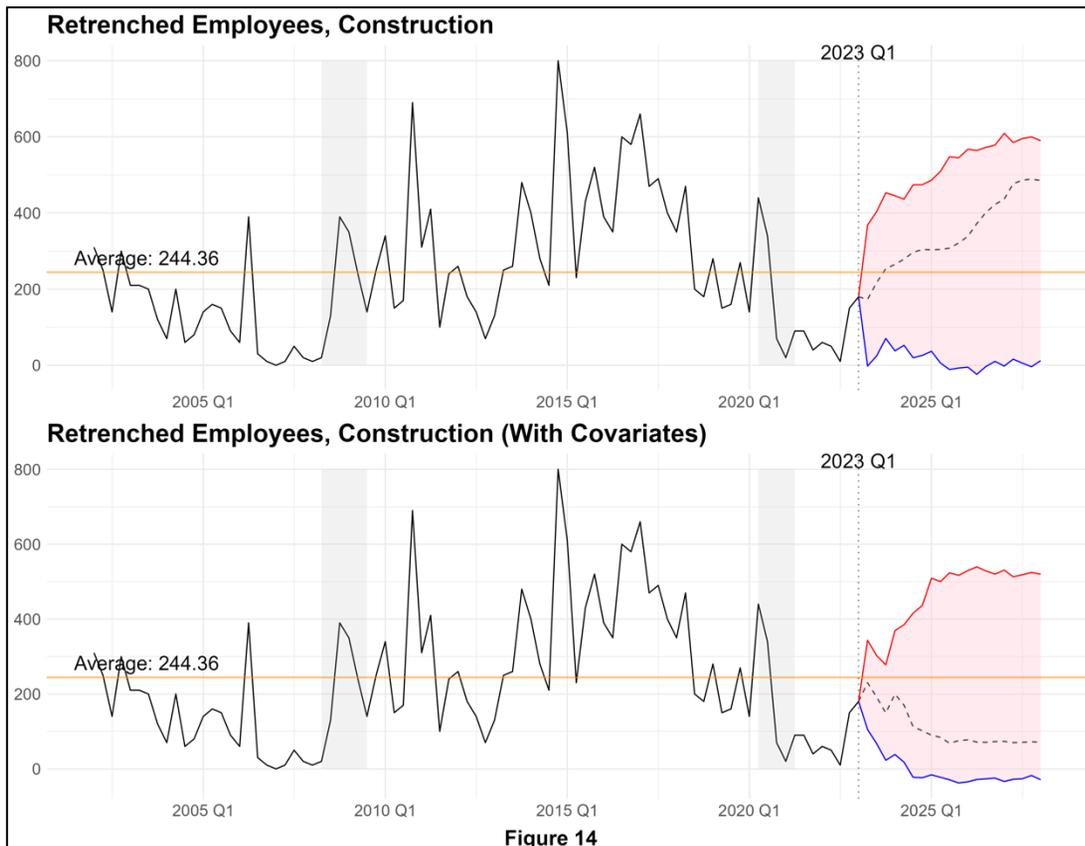




## Retrenched Employees

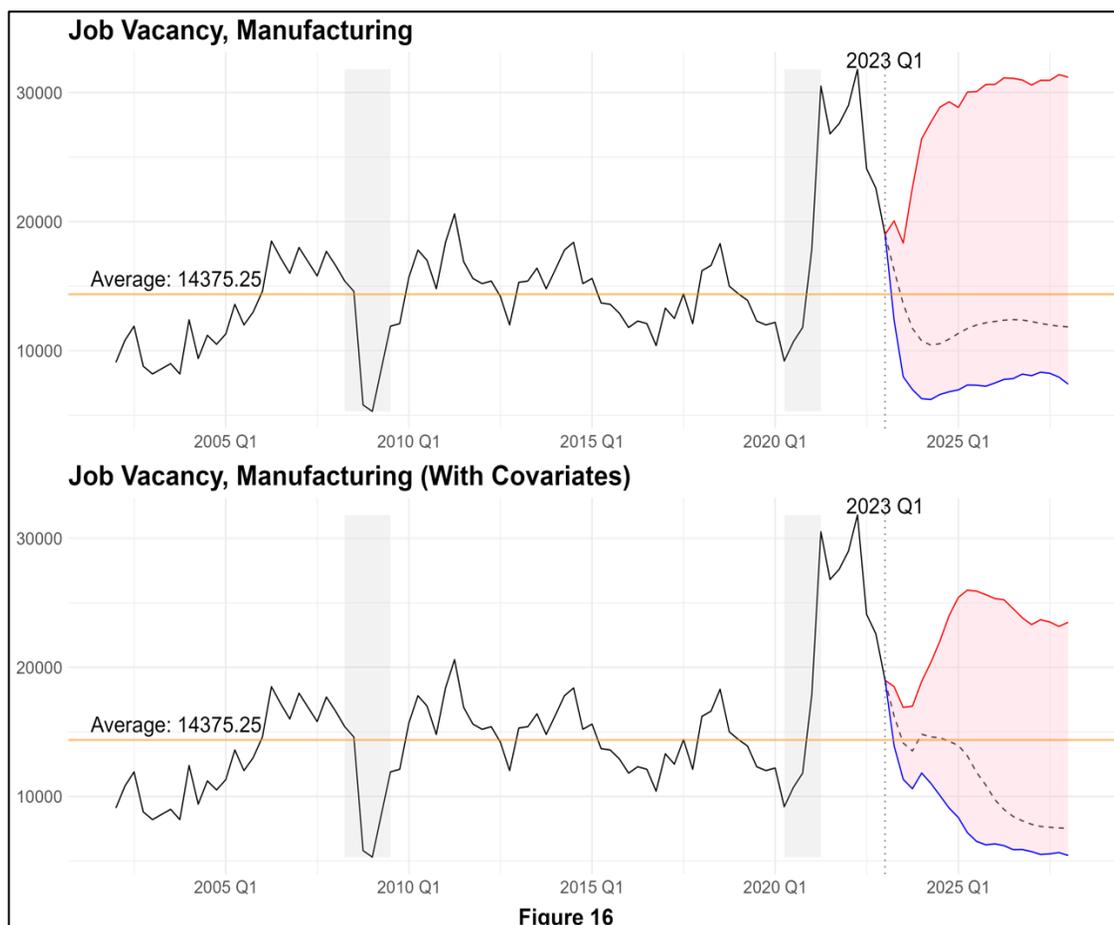
Figures 13, 14, and 15 plot the number of employees retrenched in the manufacturing, construction, and services industries, respectively. While Figure 10 predicts that manufacturing employment is expected to decline, this is tempered by a slight decline in expected retrenchments in the sector. For construction retrenchments, the models with and without covariates predict the retrenchment trends differently. This may not be surprising when viewed from the lens of business cycle as the construction sector tend to be highly cyclical, and therefore, more volatile. Interestingly, for the services sector, both models predict that retrenchments will increase initially, before declining towards the long-term average and dipping below it.

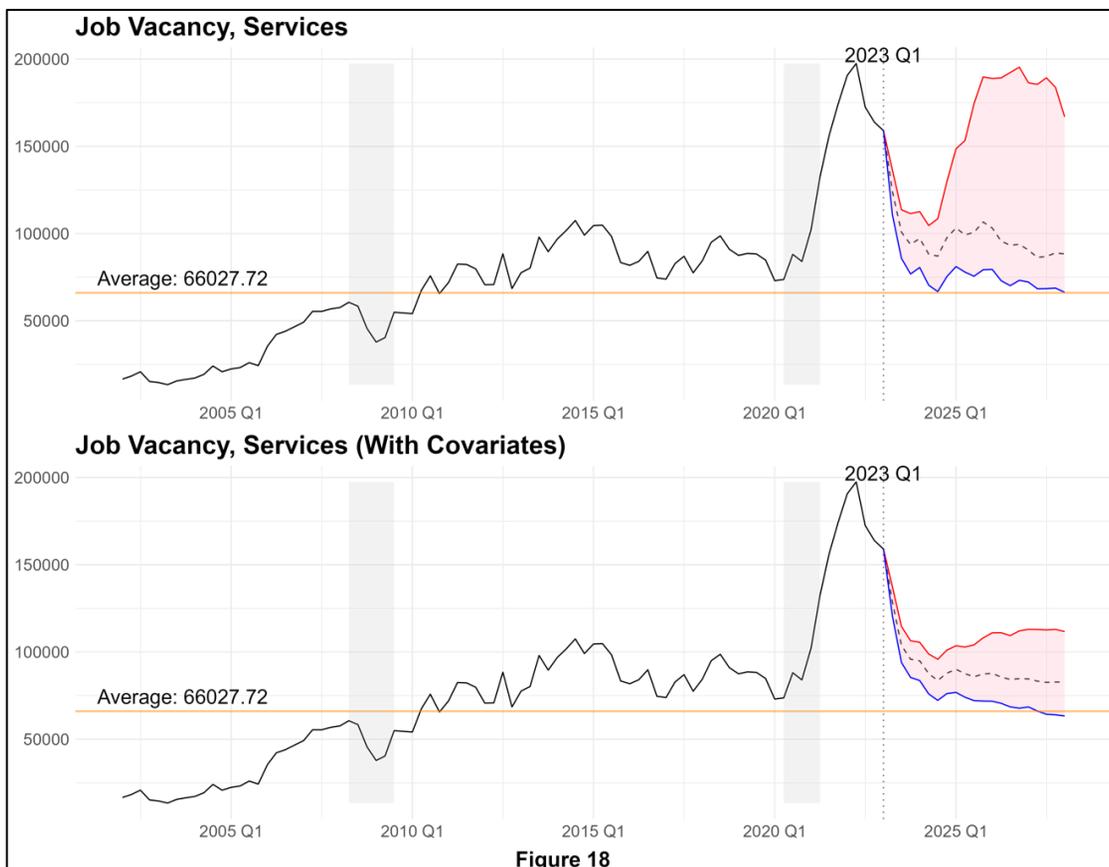
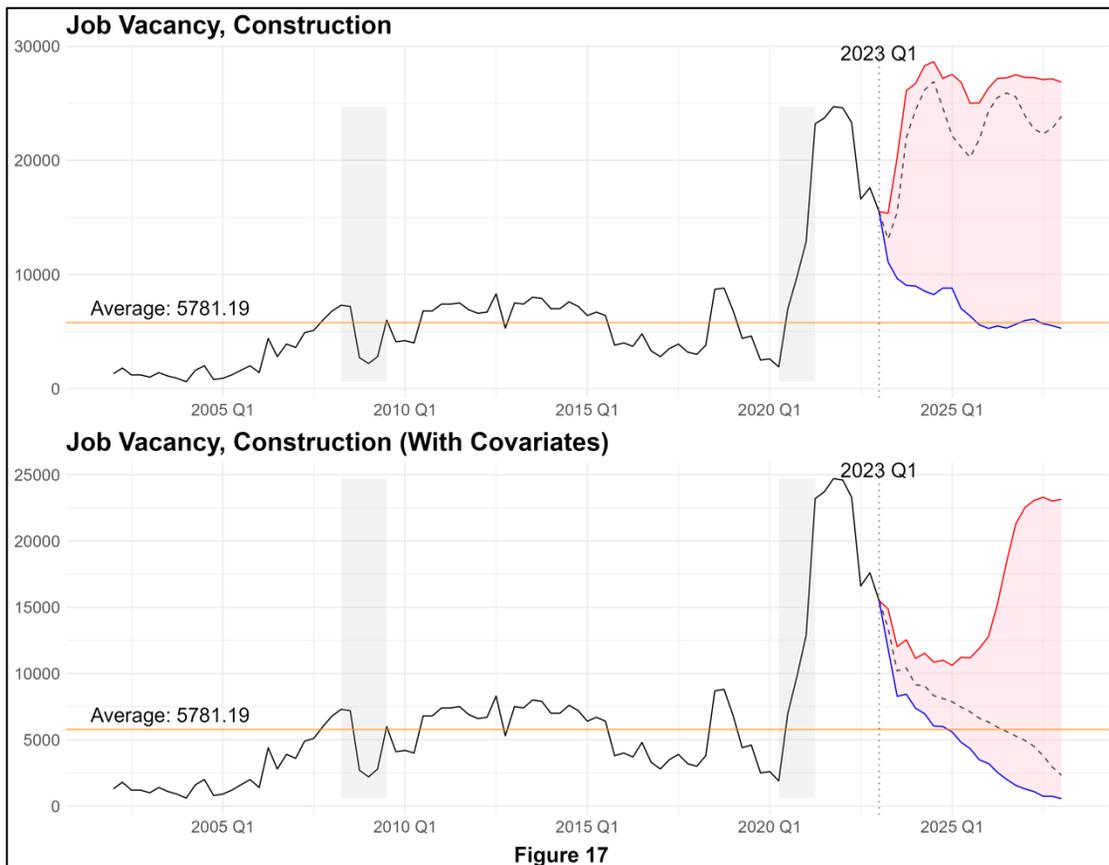




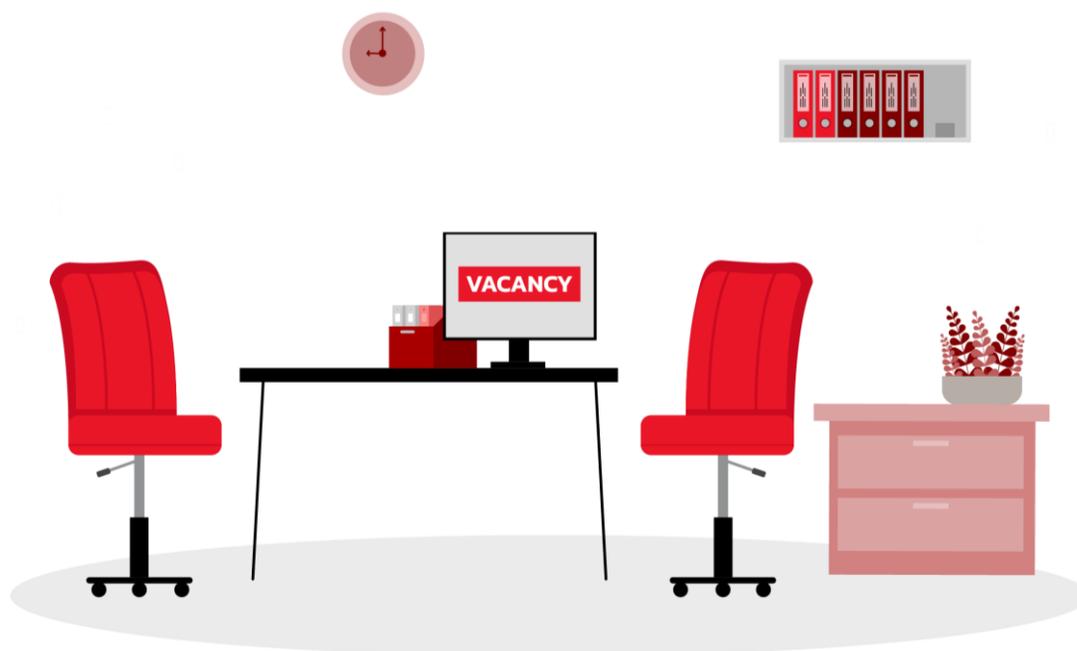
## Job Vacancy

Figures 16, 17 and 18 plot the number of job vacancies for the manufacturing, construction, and services industries, respectively. For the manufacturing industry, both models predict a downward trend in job vacancies. Based on the model with covariates, job vacancies in the construction industry are expected to decline. This is consistent with the forecasted employment change in the sector shown in Figure 11, where employment in construction is expected to weaken over the next five years. The number of job vacancy in the services industry was at its peak in 2020. A possible explanation is that the pandemic resulted in a mismatch of jobs and vacancies in the services industry, in that retrenchments in the sector during this period had left significant positions to be filled. Job vacancies in the service industry are expected to decline over the next five years, although they are expected to remain above the long-term average.





In this section, we employ artificial neural network autoregression to construct five-year ahead forecast of key labour market indicators at the aggregate and industry levels. We observe several noteworthy trends. First, we find that the labour market is generally expected to recover, as reflected by the forecasted increase in the job vacancy to unemployment ratio and a fall in the unemployment rate. Second, at the industry level, the manufacturing industry could experience some headwinds. Employment growth in this industry is predicted to remain weak and with the possibility that a net loss in employment could be experienced at the quarterly level over the next five years. We find the labour market indicators from the construction sector to be more difficult to forecast. This could be attributed to the volatile and highly cyclical nature of the sector. For forecasting the construction industry, other time series approaches should be explored along with autoregression models (such as models that account for fluctuations in volatility). Finally, although retrenchments are expected to fall across the three industries (as suggested by the model with covariates), job vacancies are also expected to decline over time. The reduction in job vacancies may reflect the easing of policies targeted to support job losses during the pandemic. Importantly, the expected decline in job vacancies may lead to greater search frictions for job seekers and potentially contribute to longer unemployment spells.<sup>2</sup>



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<sup>2</sup> It would be interesting to forecast unemployment duration at the industry level, but such data was not available for this analysis.

## Chapter 4: Strategies to Overcome the Challenges of an Ageing Workforce

From the population white paper in 2013, it is estimated that by 2030, 900,000 Baby Boomers will enter their silver years (and potentially leave the workforce). The top three industries that have the highest incidence of workers aged 55 and over are Cleaning & landscaping, Land transport & supporting services, and Food & Beverage Services (MOM, 2020).

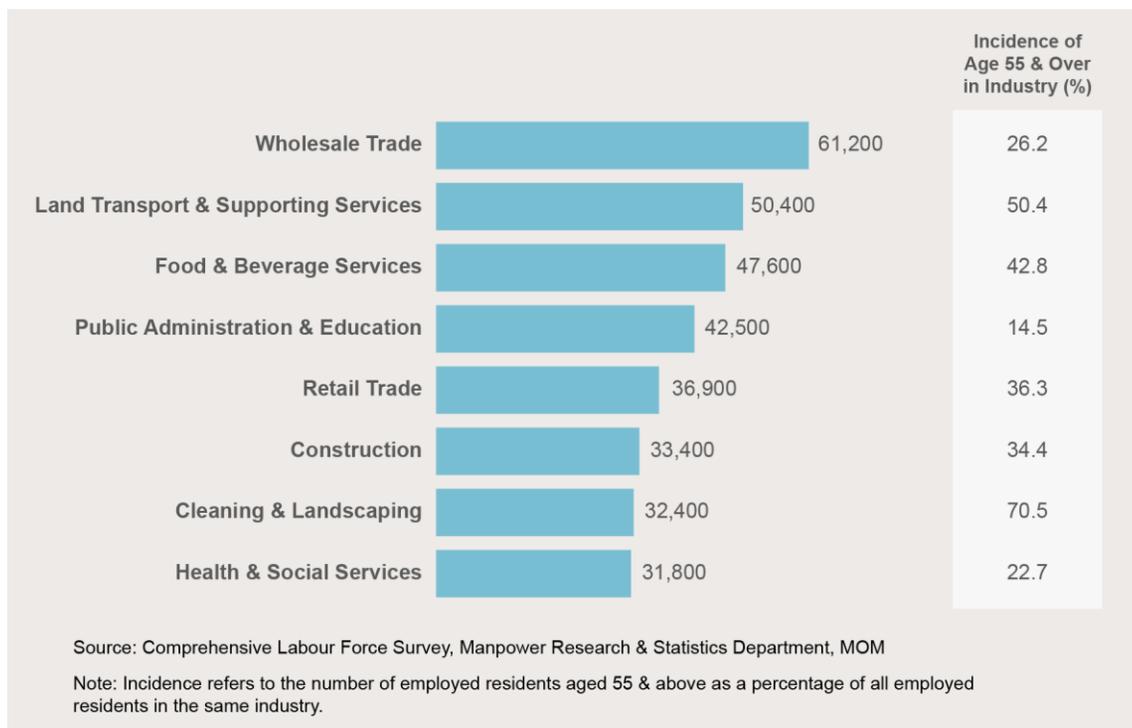


Figure 19: Top industries among employed residents aged 55 and over, June 2022

This section discusses the possible approaches to resolve the challenges that may be brought about by a slowing workforce growth because of an ageing population. Specifically, we seek to address the following research question: What are the implications of an ageing workforce for different industries? Section 4.1 assesses how the incorporation of automation and robots could help to moderate a shrinking workforce and how this integration will affect Singapore. Section 4.2 looks at alternative measures and policies implemented by foreign countries in their attempt to attenuate the effects of an ageing population.

### 4.1 Movement Towards Automation

Once organisations begin to accept the reality of a shrinking labour force because of population ageing, the next logical step would be to look at possible strategies to mitigate the challenges that arise. For example, to deal with the manpower shortage businesses may look towards automation as a solution and in this instance utilising robotic technology to overcome the manpower shortfall brought about by population ageing and, in the process, seeking to meet their business goals and shareholder targets.

In China, the government not only strongly encourages the adoption of robotic technology, it also actively promotes the innovation of such technology to tackle the challenges of the labour force (Cheng et al., 2019). In 2015, the government of Guangdong Province set aside a US\$150 billion fund to encourage firms to invest in automation technology and promote robotics innovation. The pressure to switch to automation, incorporate machinery and use robots is prominent in China's manufacturing sector as the country's labour force declines while labour costs increase, propelling China's manufacturing sector to continue adopting robots to remain profitable (Cheng et al., 2019). Similarly in Korea, the adoption of industrial robots has been by far the highest since 2010, according to the International Federation of Robotics' World Robot Statistics (Park et al., 2021). In 2016, Korea recorded 631 robots per 10,000 employees in the manufacturing industry, followed by Singapore, Germany, and Japan. Park et al. (2019) also showed that the use of robotic technology does indeed mitigate the negative effect on productivity that results from an ageing population, although there are differences depending on occupational sectors.

The number of industrial robots in the United States and Western Europe has increased four-fold between 1993 and 2007. By 2016, there were on average 74 industrial robots installed per 10,000 employees globally. This number is remarkably higher in Singapore, where 488 robots per 10,000 employees are deployed (IMDA, 2018). The total number of industrial robots deployed globally is estimated to grow from around 1.5 million in 2014 to about 5 million by 2025 (Boston Consulting Group, 2015) and this trend has important implications on labour markets. In the US context, Acemoglu and Restrepo (2020) demonstrated that "one more robot per thousand workers reduces the employment to population ratio by about 0.18-0.34 percentage points". If this number applies to Singapore, as many as 175 thousand job losses could result from a mere increase of 10 robots per thousand workers (computed based on 2021 labour force participation rate of 70.5% and total employment number of 3,643.5 thousand reported by Statistics Singapore).

Even though Singapore has introduced various strategies and innovative programmes such as SkillsFuture and encouraging of the upskilling in workers, it is possible that the automation may be leaned on more as a necessary solution to overcome the issue of labour shortage. The proportion of seniors aged between 65–74 has almost doubled from 338,000 in 2010 to 614,000 in 2020 (Wong et al., 2022). It is inevitable that the ageing population will continue to be a persistent issue in Singapore as the current proportion of 50-year-olds continue to age in the next decade and add on to the number of senior citizens.

Although we are unable to determine a causal link between automation and the ageing phenomenon, the unavoidable reduction of Singapore's labour force will ultimately push companies to blend if not, replace human labour with machines. From a policy perspective, it is pertinent to investigate how the increasing use of robots may affect employment across various sectors in Singapore, and whether automation could be the

solution to address the issue of declining working age population. Using data from the International Federation of Robotics (IFR) and various labour force reports in Singapore, we document stylised facts on how automation has affected the labour force in Singapore in the past decade. We first determine the demographic of people at employment risk from computerisation, by industry.

Utilising the probabilities of computerisation for each occupation provided in Lee (2017), and the employment data retrieved from the Labour Force in Singapore 2022 (MOM, 2023a), we plot the proportion of employed residents who are at high-risk, medium-risk, and low-risk for the past decade from 2012 to 2022<sup>3</sup>. Figure 20 shows that the proportion of employees in the high-risk group has declined over the years. This is consistent with the findings of Lee (2017) for the period of 1991-2015. The reason argued in Lee (2017) is “the revolution of the country’s economic model since the 1990s”, and industries that are highly susceptible to computerisation such as “manufacturing industries, were already being automated”. It is noted, however, the estimated proportion of workers by risk level seems to be different in Lee (2017) and ours in the few overlapping years of 2012-2015. The reason is likely to be that our estimation is based on 1-digit occupation codes, while those in Lee (2017) may be estimated from the 2-digit occupation codes.

Figure 21 highlights that the five industries that have at least one-quarter of its employees at high-risk are: (1) transportation and storage, (2) administrative and support services, (3) accommodation and food services, (4) other community, social and personal services, and (5) public administration and education. The industry that is most susceptible to automation is transportation and storage, where about 60% of the employees are at high risk.

Figure 22 shows that among the high-risk group of workers, 22% are in the transportation and storage industry, followed by 14% and 12% in the public administration and education industry, and wholesale and retail trade industry, respectively. The three sectors contribute to almost half of the high-risk employed residents.

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<sup>3</sup> High-risk occupations are occupations with above 70% probability of computerisation; medium-risk occupations are occupations with 30%-70% probability of computerisation; and low-risk occupations are occupations with below 30% probability of computerisation. This is consistent with Frey and Osborne (2017) and other studies that examined the labour force impact of automation.

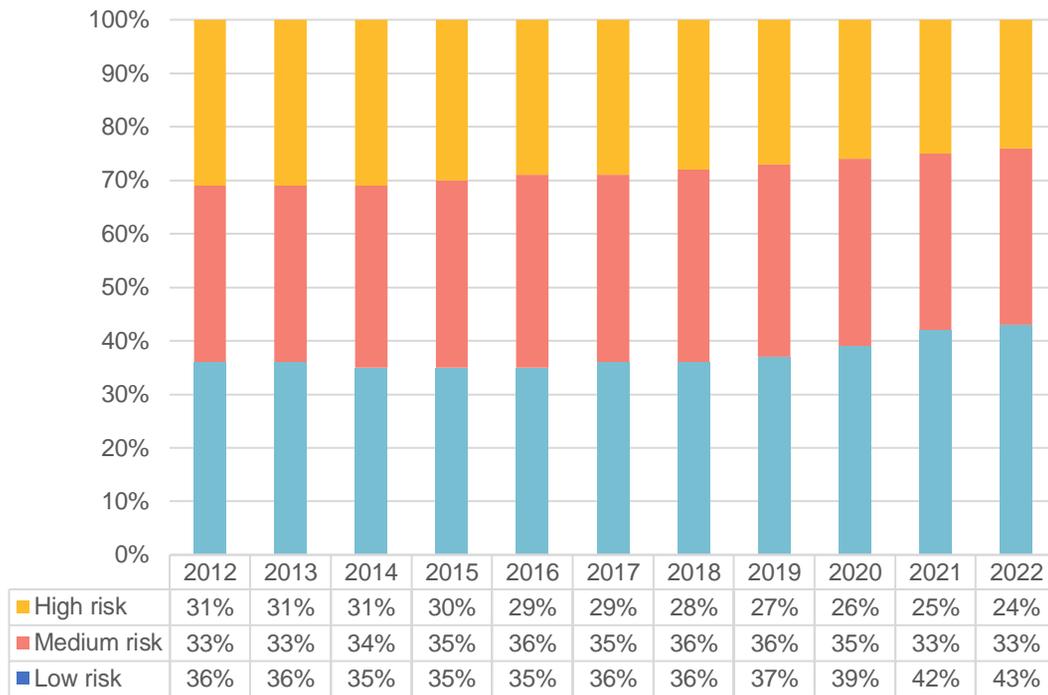


Figure 20: Proportion Of Employed Residents Aged 15 Years And Over By Employment Risk Level For 2012–2022



Figure 21: Proportion Of Employed Residents Aged 15 Years And Over In 2022 At High Risk Of Computerisation: By Industry

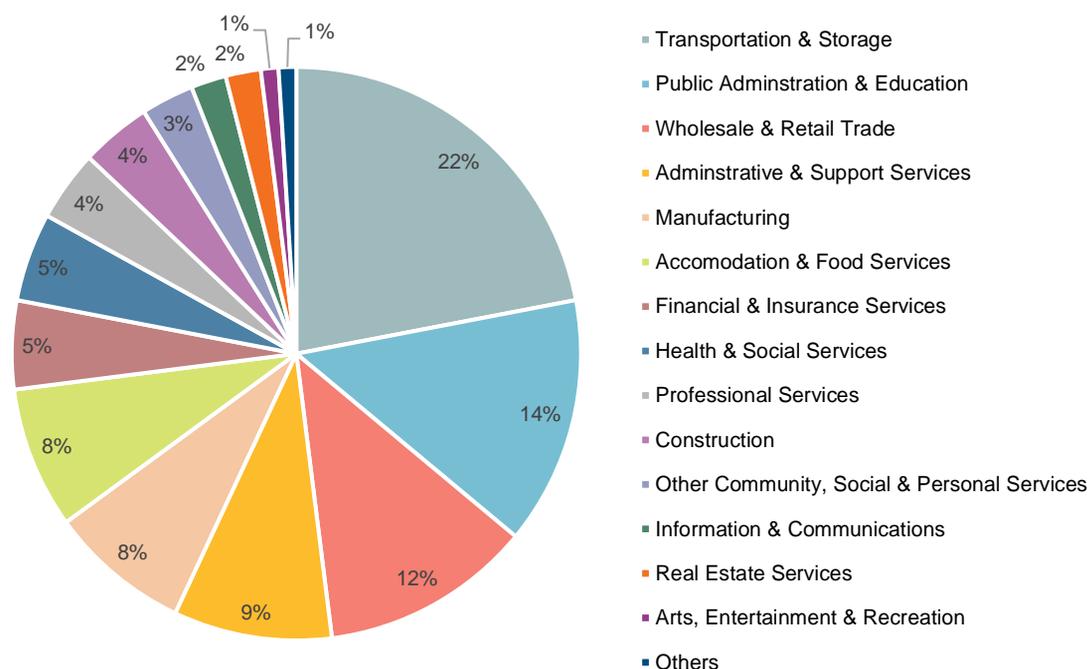


Figure 22: Employed Residents Aged 15 Years And Over In 2022 At High Risk Of Computerisation: Breakdown By Industry

Using data from the *International Federation of Robotics (IFR)* and *World Development Indicators* which covers 63 countries and a period of 2005–2021, and the econometric methodology of difference generalised method of moments (GMM), we find that:

1. If the new installations of industrial robots per 10,000 labour force increase by 1%, unemployment rate will reduce by 0.037%–0.039%.
2. The new installations of industrial robots per 10,000 labour force have a larger impact on male, with a 1% increase of installations reducing the unemployment rate of males by 0.045%, versus 0.033% reduction of female’s unemployment rate.
3. The new installations of industrial robots per 10,000 labour force do not affect the unemployment rate of youth labour force differently from that of the overall labour force.
4. The new installations of industrial robots per 10,000 labour force have a significantly negative effect (-0.052) on the unemployment rate of the labour force with intermediate education, but not on that of the basic or advanced education.

The results are robust qualitatively when using different variables to measure the technological advancement (i.e., the operational stock of industrial robots per 10,000 labour force, the new installations of industrial robots per 10,000 population, the operational stock of industrial robots per 10,000 population). For more technical details please see Appendix E.

It is noteworthy that our analysis was based on international data on the industrial robots for a period of 2005–2021. It does not take into consideration the service robots and other

technologies such as artificial intelligence or the recent development of generative AI. In general, it is found that the adoption of industrial robots is likely to have a positive impact on the labour force by creating more job opportunities, especially for male workers and workers with middle level of education (i.e., upper secondary or post-secondary non-tertiary education). Therefore, the gap of unemployment rates between genders is likely to be widened by automation, but it will reduce the gap of unemployment between workers with intermediate and advanced education.

However, as Agrawal et al. (2019) have argued, “the net effect (of artificial intelligence on labour) is an empirical question and will vary across applications and industries”. In the same vein, the accurate estimation of the net effect of automation or technological advancement on unemployment also requires the in-depth examination of the industry-specific technologies within the specific country and data as well. For example, for the generative AI, which has drawn a lot of discussion in 2023, scholars found that many workers in the US (80%) will be somewhat affected (at least 10% of their work tasks) (Eloundou et al., 2023).

Hence it is strongly recommended that organisations, together with the help of government institutions, collaborate on enabling workers, particularly those in sectors that are vulnerable to high automation, to ensure that those employees who are found to be redundant should have opportunities to be retrained to allow for redeployment within the organisation or be provided with opportunities to transition into other new industries e.g., via available industry career conversion programmes.

For those workers in sectors where industrial robots create more job opportunities, then it would be highly beneficial if employees were provided with upskilling and upgrading avenues so that their skills can complement the nature of their roles in a more technologically reliant workplace. Therefore, it is imperative that policy makers put in place appropriate policy changes that will aid in facilitating these transitions, reduce the social cost of automation and empower employees with the right skill sets to maximise their capabilities and contributions to the labour force.

## 4.2 Systematic Review of Labour Policies Across Countries

In this section the focus is on the countries that are facing a similar situation of an ageing workforce and the spectre of slowing workforce growth like Singapore, and how they have attempted to tackle this phenomenon. As discussed previously in Section 4.1, one possible solution to tackle the expected labour shortage because of population ageing is through the introduction of automation either to substitute or complement human capital. In many instances, the labour shortage can be ameliorated via automation (Stahler, 2021). However, this is not the only solution. In this section, we carry out a review of the strategies and/or policies that they have implemented to tackle this issue arising from this demographic phenomenon. In the process, we identify relevant countries and compare them with Singapore to identify the similarities and differences in approaches that the countries have adopted to tackle this wicked problem. Through this exercise we hope to

provide valuable insights and perspectives regarding the current and future labour market policies that Singapore has implemented or may adopt in the future.

Content analysis was utilised for a clear identification and determination of rhetoric characteristics, examine repetitive patterns from various published journals and articles, and subsequently extrapolate meaningful data from the process (Ding et al., 2014). The countries for the content analysis were selected due to their large ageing population and the adoption of appropriate strategies to overcome this issue. For the full analysis of the selected countries, please refer to Table 6 in Appendix A. The common strategies that have been extracted from our findings include:

1. Career guidance programmes/Job training
2. Employment/Tax subsidies
3. Awareness campaigns/Outreach programmes
4. Implementation of anti-discrimination policies
5. Health protection and promotion
6. Reduce working hours
7. Gradual elimination of seniority wage systems
8. Retirement/Pension reforms
9. Financial support for self-employment
10. Flexible work arrangement



To allow for a focused and more pertinent examination, from across the multiple countries identified in this systematic review, a closer examination and comparison of Singapore's existing legislations and strategies is made with two selected countries specifically Netherlands and Japan. This will allow for a more in-depth analysis of the policies and strategies and their potential applicability and potential policy transferability to inform the Singapore situation. The choice of the Netherlands and Japan stem from their relevance to the research question(s) posed by this project. These countries have faced similar challenges related to ageing populations and workforce dynamics, which makes them pertinent to our study. The countries selected also share similarities with Singapore in terms of demographic trends, economic development, or labour policies that can facilitate a more meaningful comparison.

In 2020, the Japanese population aged 65 and above stood at 29%, much higher than Singapore's 17% (Singapore Department of Statistics, 2022). This has driven the Japanese government to take immediate action to mitigate the potential consequences of the ageing population on their economic growth and labour pool. Like many other countries facing an inevitable trend of an ageing population, Japan has enacted numerous policies to address workforce challenges particularly to cater to the employment needs of its growing demographic of mature workers.

In the case of the Netherlands, it has one of the most comprehensive and successful measures in supporting its ageing population. Like Singapore, the Netherlands has crafted its policies to increase the retirement age, restrict early access to pensions and provide support to employers in recruiting mature workers. One area of interest is self-employment among the Dutch mature workers. In 2019, about 40 percent of mature workers between the ages of 50 and 64 were self-employed (Karpowicz, 2019). This is a potential area that Singapore could emulate from the Dutch government, specifically by leveraging mature workers who wish to remain in the workforce but wishing to operate in a more flexible work environment.

	SINGAPORE	JAPAN	NETHERLANDS
Features/Strategies			
Career guidance programmes/Job training	✓	✓	✓
Employment/Tax subsidies	✓	✓	✓
Awareness campaigns/Outreach programmes			✓
Implementation of anti-discrimination policies	✓		✓
Health protection and promotion	✓	✓	✓
Reduce working hours	✓	✓	✓
Gradual elimination of seniority wage systems	✓	✓	
Retirement/Pension reforms	✓	✓	✓
Financial support for self-employment		✓	✓
Flexible work arrangements	✓	✓	✓
Mentoring/Intergenerational collaboration			✓
Foreign labour intake	✓	✓	✓

Table 2: General Review of Policies for Selected Countries

## Skill Enhancement and Workforce Integration

Across Singapore, Japan, and the Netherlands, there is a resounding emphasis on equipping mature workers with skills that enhance their employability and facilitate their continued participation in the labour market. Career guidance programmes and job training underscore a shared commitment to supporting skill development. These initiatives recognise that mature workers bring valuable experience and can remain valuable contributors with up-to-date skills.

In the context of Singapore, there is a clear movement towards skills upgrading as evident from government-initiated programmes such as The Singapore Workforce Skills Qualifications, that not only encourages lifelong learning, but also promotes comprehensive skills development both in terms of technical and generic abilities that companies look for in potential employees (MOM, 2020b).

In the Netherlands, the “Talent 55+” programme was developed to cater to workers aged 55 and above. It is a career guidance scheme that encompasses job search networks, run by specially trained job counsellors to assist mature workers in improving job search behaviour, motivate them and building self-confidence in these mature workers (European Commission, 2019). Similarly, Japan’s Public Employment Service has developed the “Hello Work” employment facility aimed at providing career guidance and job placement services for older job seekers above 55 years old (OECD, 2018a).

The shared emphasis on career guidance programmes and job training in Singapore, Japan, and the Netherlands is best understood through the lens of Hofstede’s cultural dimension of “Long-Term Orientation” (Hofstede, 2011). All three countries score relatively high in this dimension, indicating a focus on preparing for the future and valuing persistence and perseverance. This cultural trait drives the commitment to continuous skills development, ensuring the adaptability of mature workers in changing job landscapes.

## Inclusivity and Anti-Discrimination

Both Singapore and the Netherlands have implemented anti-discrimination policies to eliminate biases related to age in the workplace. These policies promote inclusivity and ensure that mature workers are treated fairly and provided with equal opportunities. Awareness campaigns and outreach programmes in the Netherlands likely support a similar goal of combatting stereotypes and fostering a more inclusive work environment.

Under The Tripartite Guidelines on Fair Employment Practices, Singapore has clear guidelines on non-discriminatory employment, including age discrimination. Employers are expected to avoid age-centric selection criterion unless “bound by legal or regulatory requirements” (Tripartite Alliance for Fair & Progressive Employment Practices (TAFEP), 2019). They are also encouraged to reveal if a job is suitable for mature workers, in alignment with national efforts to improve employment opportunities in mature workers (TAFEP, 2019). The Ministry of Manpower (MOM) will also be rolling out anti-

discrimination legislation in 2024 to eliminate workplace discrimination and address unfair treatment at the workplace (MOM, 2023c).

Similarly, the Netherlands implemented the Equal Treatment in Employment (Age Discrimination) Act, which prohibits direct and indirect age-discrimination in employment (Government of the Netherlands, 2016). Apart from legislative support in combating age discrimination, Netherlands also actively promotes recruitment of mature workers, specifically those aged 50 years old and above to participate in employment opportunities through radio and online commercials. Employers are also encouraged to announce job vacancies through radio stations to invite mature workers to job interviews (European Commission, 2019).

The absence of similar anti-discrimination policies in Japan may be attributed to Hofstede's cultural dimension of "Masculinity vs. Femininity" (Hofstede, 2011). Japan's society leans towards masculinity, prioritising assertiveness, competition, and achievement. This focus might shape the perception of age in the workforce, with an emphasis on individual performance and contributions. Consequently, the need for specific anti-discrimination policies targeting age might be perceived as less pronounced, as individual merit is highly valued within the broader masculine framework. Singapore and the Netherlands, in contrast, with their relatively higher scores in femininity, place greater emphasis on cooperation, empathy, and equality. This cultural inclination prompts the need for anti-discrimination policies that promote inclusivity and equal treatment, acknowledging the value of experience and diverse perspectives in the workplace.

### Health, Well-Being, and Flexible Work Arrangements

Health protection and promotion are integral components of ageing policies in all three countries. This commitment to ensuring the well-being of older citizens reflects a holistic approach that recognises the importance of physical and mental health in maintaining a productive and engaged ageing workforce. In a parallel trajectory, all three nations have also adopted flexible work arrangements and reduced working hours, recognising the evolving preferences of mature workers.

The Healthier SG initiative in Singapore targets preventive care through early detection of health issues and supporting an active lifestyle by forging long-term health-seeking habits. This shifts the onus of taking care of one's health onto the individual in improving their quality of life (Ministry of Health Singapore, 2023). Additionally, MOM has acknowledged that Singapore's fast ageing society will continue to pose significant challenges as caregiver needs increase while the labour force shrinks. As such, MOM will be launching Tripartite Guidelines on Flexible Work Arrangements in 2024 "to enable more employees to continue working or re-enter the workforce while managing their caregiving commitments" (Tay, 2023).

Netherlands has taken a more legislative approach by offering a partial retirement scheme, thereby permitting workers to switch from full-time to subsidised part-time work (Eurofound, 2016). The reduced work hours are implemented to encourage retention of

workers in the labour pool rather than losing them to a complete exit from the workforce (European Commission, 2019).

Like the Netherlands, Japan's Legislative reform package (Work Style Reform) was introduced in 2018 to improve the working conditions of employees, including measures to maintain the health of workers as well as reduction of overtime working hours (OECD, 2018a).

The emphasis on health protection and promotion within the ageing policies of Singapore, Japan, and the Netherlands reflects a comprehensive approach rooted in the cultural dimension of "Indulgence vs. Restraint" by Hofstede. All three countries score relatively high in indulgence, demonstrating a shared value for personal well-being, needs satisfaction, and quality of life. This cultural inclination toward indulgence underpins the prioritisation of holistic well-being in these policies. Both health-focused endeavours and flexible/reduced work schemes align with their societal values of promoting individual fulfilment and enhancing the overall quality of life for older citizens.

### Retirement/Pension Reforms

All three countries have tackled the issue of early workforce exits driven by retirement and pension benefits. They've enacted pension reforms, often coupled with raising the retirement age. This comprehensive strategy discourages premature retirement and encourages older employees to remain in the workforce, thereby enhancing overall employment rates.

Japan's pension allowance is linked directly to tenure rather than age, to cultivate long-term organisational commitment (Sueki, 2016). In this manner, employees are encouraged to extend their career lives to earn a larger sum of retirement allowance.

Netherlands and Singapore have been gradually increasing their retirement age, with Netherlands raising theirs from 66 years old in 2022 to 67 in 2024 (European Commission, n.d), and Singapore raising the statutory retirement age to 65 by 2030 (MOM, 2021).

The high scores across Singapore, Japan, and the Netherlands in Hofstede's cultural dimension of "Long-Term Orientation" (Hofstede, 2011) provide an illuminating context for the convergence of this policy. Long-term orientation encompasses valuing persistence, perseverance, and thriftiness for future rewards. In the case of retirement and pension reforms, this cultural leaning aligns perfectly. All three countries share an affinity for policies that reflect a long-term outlook, prioritising the cultivation of dedication, loyalty, and sustained commitment.

### Entrepreneurship and Self-Employment

Japan and the Netherlands provide financial support for self-employment, acknowledging the entrepreneurial potential of older individuals. This approach encourages senior

workers to participate in productive economic endeavours beyond traditional employment, thereby contributing to overall economic growth. Notably, both Japan and the Netherlands exhibit relatively high scores in individualism, which underscores the significance of individual rights. Within these individualistic societies, policies promoting self-employment align seamlessly with values of personal autonomy and the pursuit of personal accomplishments. The emphasis on individual rights and aspirations propels these nations to facilitate opportunities for older individuals to explore entrepreneurial pursuits, leveraging their expertise and fostering economic diversity.

The Dutch government provides subsidies and tax schemes for those looking to start a business and register for self-employment. To encourage entrepreneurship, the government has made funding options and loans available for start-up businesses in need of loans (Business.gov.nl, 2017a).

In contrast, Singapore, characterised by its strong collectivist culture that centres around group interests, adopts a distinct approach. Here, the ageing workforce is encouraged to integrate and contribute to the larger societal unit rather than opting for self-employment. The policy landscape reflects a collective orientation, prioritising cooperative efforts that strengthen the overall social fabric. This intricate interplay between cultural values and policy choices highlights the diverse strategies employed by these nations to address the challenges posed by ageing populations while staying true to their cultural dispositions.

### Reliance on Foreign Labour

Many countries we spotlighted in this section have turned towards migration as a solution to supplement and complement the shrinking labour pool. Singapore is no exception, considering the limited manpower it has being a small nation. It is therefore unavoidable to rely on foreign manpower to meet the manpower demands and remain economically competitive. To cushion the impact of an ageing workforce, the Singapore government has enacted several policies. These include measures to ensure that local talent is prioritised over foreign labour, such as raising the qualifying salaries for Employment Pass (EP) and S-Pass holders to levels comparable to the top one-third of local PMET wages (MOM, 2022). This ensures that foreign workers are not employed merely for cost savings but to fill genuine skills gaps. Additionally, the Complementarity Assessment Framework (COMPASS) has been introduced to assess EP applications based on a holistic set of attributes, allowing companies to select high-quality foreign professionals (MOM, 2022). By implementing these strategies, Singapore aims to strike a balance between leveraging the foreign workforce to address its demographic challenges while safeguarding the interests of its local workforce and minimising social costs to Singaporeans. These measures demonstrate a commitment to maintaining economic vibrancy, even in the face of a super-aged society, through a well-regulated and complementary foreign labour force.

Singapore, Japan, and the Netherlands employ diverse strategies to manage their ageing workforces and balance the integration of foreign labour while minimising social costs. From the above analysis, we can infer that Singapore's approach centres on wage

benchmarks and comprehensive assessment frameworks, while Japan leans towards a more restrictive approach with limited pathways, and the Netherlands emphasises stringent criteria and prioritisation of highly skilled migrants. These approaches reflect the unique socio-economic contexts and policy priorities of each country.

To encourage mature workers to continue working, workplace policies would need to adapt to be more inclusive (Chen & Gardiner, 2019; Connell et al., 2015). According to Kooij et al. (2014), HR practices can be categorised into four broad categories: developmental, maintenance, utilisation, and accommodative. Developmental practices include training and promotion to help mature workers to improve their performance. Maintenance practices such as compressed workweek and ergonomic adjustments at workplace are ways to help mature workers maintain their performance despite loss of resources due to age (e.g., physical abilities). Utilisation practices involve leveraging mature workers' personal resources (e.g., experience, knowledge, skills) in their new job roles such as mentoring to help them regain their performance. Finally, accommodative practices such as reduced workload or reduced responsibilities are implemented to help mature workers work at a lower level as they could no longer regain their previous performance (Remery et al., 2003). It may be assumed that changes in workplace policies to address the ageing workforce may generally have a positive impact on mature workers (Egdell et al., 2020). As such, one of the aims of this study is to understand the workplace policies that have been implemented by local companies to address the ageing workforce and to provide recommendations on how companies can support mature workers to prolong their working lives.

The labour policies presented in this comparison have revealed several valuable insights that have highlighted the prevalence of major challenges posed by an ageing labour force. These issues transcend geographical boundaries and can impose numerous ramifications on the labour force. As Singapore's ageing population continues to expand, it is imperative that we dissect the matter at hand to assess the local situation and subsequently determine how Singapore might preserve the economic security at both the national and individual levels.



## **Chapter 5: Returning to the Labour Force: Leveraging Mature Workers and Women with Caregiving Duties**

Hong and Schneider (2020) posit that Japan's shrinking working age population will propel more women and elderly beyond the retirement age to join the labour pool. This must be coupled with "automation, artificial intelligence, and robotics" to respond to the issue of an ageing workforce (Hong & Schneider, 2020). Similarly in Singapore, it is important to explore existing available human resources that could potentially be tapped on to slow down the decline in manpower. Just like Japan, Singapore could leverage (i) mature workers and (ii) women with caregiving duties who may have difficulties returning to the labour force after having to leave their jobs due to their commitments.

In this section the focus of the discussion will centre around the challenges and possible means to support the re-introduction of these two groups back into the labour force, thereby potentially sustaining the local manpower pool. The research methodology employed to address the research questions can be found in Appendix C. The following section will discuss the findings derived from the qualitative data collected from the Focus Group Discussions (FGD). The aims of the FGDs with mature workers and women with caregiving duties are to understand (i) the perceived facilitating factors that support them in staying in employment, (ii) perceived barriers to staying in employment, (iii) various desired support to address the unique challenges faced by the two groups, and (iv) the factors preventing them from sustaining at work.

In addition, for sections 5 and 6 where relevant, the qualitative data analysis will also incorporate quantitative data analysis carried out from survey with C-Suite executives, hiring managers, and HR leaders with experience regarding either hiring or managing workers aged 45 and older. By incorporating both sets of insights, it is hoped that this will provide a deeper understanding of how employers are dealing with a rapidly ageing workforce as well as their views on the value of mature workers (45 and older), the challenges they face, and the strategies utilised to effectively optimise the career development and contribution of workers.

The survey was administered by a third-party survey vendor from 24 July 2023 to 21 August 2023, engaged by Tsao Foundation and NTUC. The survey took an average of 15 minutes to complete and was carried out in English. Respondents were recruited from an online panel managed by the survey company. All participants were screened prior to the start of the survey to ensure that they belonged to the target group before they continued with the main survey. Quota sampling was used to ensure satisfactory representation participants from the respective backgrounds. For more information regarding the inclusion criteria and the quotas employed, please refer to Appendix F.

A final sample size of 601 respondents was obtained. 32.6% of the respondents were C-suite level executives, 32.3% were hiring managers, and 35.1% were HR managers. Most

of the respondents were from the wholesale and retail trade (22.1%), manufacturing (22.0%), and financial services (15.0%). In terms of the size of their organisation, we have a fair equal amount of those from organisations with 50 to 200 employees (49.5%) and over 200 employees (50.4%). Most of the respondents also have experience in hiring mature workers (90.3%). For more information, please refer to Appendix F for the descriptive statistics of the respondents' profiles.

## 5.1 Findings

We reviewed some of the barriers faced by mature workers and women with caregiving duties in finding employment and staying in employment. Next, we examine beyond the challenges that they faced, the facilitators that helped them in finding and staying in employment. Finally, taking all in totality, the additional support that they feel will help them in their employment. Table 3 summarises the themes and categories raised from the FGDs.



Research Question: What are the perceived and actual barriers and facilitators to staying in work for women with caregiving duties and mature workers?	
Actual and Perceived Barriers	Perceived Facilitators
<p><i>Limited and unequal access to employment</i></p> <ul style="list-style-type: none"> <li>• Hiring bias due to ageism and stereotypes against mature workers</li> <li>• Difficulties in re-entering the workforce after a long period of unemployment</li> <li>• Experiencing caregiver discrimination</li> </ul> <p><i>Skills gap barriers</i></p> <ul style="list-style-type: none"> <li>• Gap between training content and required job skills</li> <li>• Having to keep up with new technology and lack of support</li> </ul> <p><i>Balancing personal commitment and professional demands</i></p> <ul style="list-style-type: none"> <li>• Restricted employment prospects to manage caregiving duties</li> <li>• Concern over job security</li> <li>• Experiencing stress when managing dual responsibilities of caregiving duties and work</li> </ul>	<p><i>Staying relevant</i></p> <ul style="list-style-type: none"> <li>• Acquiring industry-relevant skills</li> <li>• Having a strong professional network</li> <li>• Adapting to career transitions to remain in the workforce</li> </ul> <p><i>Flexibility as a workplace norm</i></p> <ul style="list-style-type: none"> <li>• Providing spatial and temporal flexibility</li> <li>• Providing flexible work options</li> </ul> <p><i>A workplace culture of respect and empathy</i></p> <ul style="list-style-type: none"> <li>• Recognising the value of mature workers</li> <li>• Empathising with employees' needs</li> </ul>
Research Question 6: What policy suggestions can NTUC offer considering an ageing and slowing workforce growth?	
<p><b>Desired Support for Mature Workers and Women with Caregiving Duties</b></p> <p><i>Promoting an inclusive society</i></p> <ul style="list-style-type: none"> <li>• Addressing ageism in hiring and protecting mature workers' rights (Implemented but requires enforcement)</li> <li>• Creating awareness of the responsibilities of caregiving (New suggestion)</li> </ul>	

***Bridging the gap between skill acquisition and employment***

- Incorporating internships and apprenticeships in upskilling programmes (New suggestion)

***Implementing needs-specific HR policies and support***

- Offering more varying employment contracts (Implemented)
- Providing more healthcare benefits (Implemented but requires enhancement)
- Implementing pro-family leave system (Implemented but requires enhancement)
- Assigning a buddy to facilitate learning (Implemented)
- Organising workshops on caregiving (New Suggestion)
- Having structured HR conversations on retirement options (Implemented by unions and some organisations)

Table 3: Themes and Categories for Women with Caregiving Duties and Mature Workers

## Actual and Perceived Barriers to Finding Employment and Staying in Employment

To find out the barriers mature workers and women with caregiving duties faced when finding employment and staying in employment, we asked the participants these questions:

- What are the factors that made it challenging for you in finding a job?
- What are some of the instances that had make you think twice about staying in your current job?
- What were some of the challenges that you faced as a mature worker/woman with caregiving duties in continuing to work?

### ***Theme 1: Limited and Unequal Access to Employment***

**Hiring Bias due to Ageism and Stereotypes Against Mature Workers.** One of the most mentioned actual barriers faced by mature workers was the difficulty in finding a job due to their age. Participants shared that it may be due to the stereotypes that mature workers “of a certain age cannot be retrained or un-coachable, cannot be re-integrated”.

“There’s an underlying premise that we can’t seem to catch up and simply because there’s a tech thing, but did anyone check in whether we can or we cannot? I don’t think there’s a checking in, I think it’s just a blanket assumption that you reach a certain age, you are unfamiliar with mobile [devices] even.” (P23, mature worker with caregiving duties, 54 years old)

Although the Fair Consideration Framework (FCF) (MOM, 2023b) sets out the requirements to ensure companies abide by fair hiring practices, participants mentioned that they still encountered discriminatory HR practices. Following are experiences that participants have encountered:

“When I look for a job, especially those who leave their telephone number, we can call them. They said, ‘*How old are you?*’ Then when you say you are at this age. They said, ‘*We accept applicants up to 35.*’ Even for part-time job, not a full-time job.” (P3, mature worker with caregiving duties, 53 years old)

“Age does play a part, age really does play a part because they know that, for example, I went for my that educator host right, they already know I’m already 52 at that time when I apply for the job right. So, they told me that you’re ‘*because of your age, I can give you just a short-term first to try it out to see*’ but I’m not so sure if I’m younger than that right, probably they will say a different thing.” (P11, mature worker, 53 years old)

**Difficulties in Re-entering the Workforce After a Long Period of Unemployment.** For those with caregiving duties, especially when they have long periods of unemployment to look after their children or elderly parents, re-entry to the workforce was a challenge. Participants who have taken a career break shared that they struggled when they wanted to re-enter the workforce as their skills are no longer relevant.

“After seven years of stopping work right, now if you want me to go back into full-time employment, I will have to take baby steps again. Because to an extent I have lost touch you know with the progress of that is in organisations maybe the process you know. So, if I still want to go back to...I will probably have to start somewhere...less maybe skill intensive type.” (P30, mature worker with caregiving duties, 62 years old)

The negative perceptions many potential employers have on long periods of unemployment made it even more challenging. These unemployment periods, even if it was a personal decision in view of caregiving duties, were viewed unfavourably by potential employers. Potential employers perceive it as a period of career stagnation and consider the unemployment gap to be a disconnection with the industry; past experiences were not valued, and the skills and knowledge were regarded to be outdated.

“I think a lot of people have mentioned about the stigma of being unemployed. That HR automatically assumes that nobody wants you. So therefore, you are actually valued less in that way. They don’t measure how much, what you bring, can bring to the organisation. They measure based on what others are measuring you based on. That means if you’re unemployed, you are unemployable. That’s actually what they are thinking about. So to me, that is a stigma there. It means the longer your unemployment period is, the more unemployable you become, in that mindset.” (P26, mature worker, 53 years old)

Even when some of these mature workers who have taken a career break were previously in managerial positions, the jobs that were offered to them were entry-level.

“I want to share the experience of my good friend who took a career break of five years. So, she discussed with her husband. Basically, the child is in need, so she decided that she’s the one that’s going to take a break and she was doing very well and a managerial position and everything. But after five years, she ended up in a divorce and then she had no choice but go back to the workforce. And she has to start from really entry-level and

become administrator. And even so, it's difficult because then you know, at the administrator roles, the skill set may be quite different from where she left off, which is a managerial post. But then with that big gap, it's not easy to just you know, go back to your previous job. So, I do think that women have to consider very carefully before giving up their career." (P19, mature worker with caregiving duties, 52 years old)

**Experiencing Caregiver Discrimination.** Participants also shared that because of their caregiving duties, at the interview stage potential employers do question their work commitment level and productivity. Participants were concerned with how potential employers will see the demands of caregiving as a hindrance to their dedication to their job and performance. This does suggest that there might be a barrier for re-entry whether real or perceived.

"Even in the past, recruiter will ask how old is my daughter, who is taking care of her. But I am the one that is looking for a job. Not her, right? Yeah so, I think they are pivoted into that direction where if you have a younger child, more attention will be on child. Might not so much on the work, or something like that. But we are also trying our best to strike a balance, which I find a bit tough because when they ask you, you cannot don't reply, right? And then it makes it like an obligation for me to let you know that *'Oh, I have a younger child. This child needs attention. Can your client accept it?'*" (P24, woman with caregiving duties, 34 years old)

"For certain employers if they are sceptical, they already have the prejudgment...they may have the thinking that *'Oh women they are weaker sex, they may not as productive as men and they have more commitment level may be higher for men because they no need to have childcaring and uh caregiving responsibilities.'* Yeah, maybe they have doubt our productivity also. That's what I feel a bit of unfairness for them, for many ladies." (P29, mature worker with caregiving duties, 50 years old)

## **Theme 2: Skills Gap Barriers**

**Gap Between Training Content and Required Job Skills.** Mature workers shared that they do recognise their lack of skills and took the initiative to upskill. However, they still face difficulties in finding employment as the knowledge that they have acquired through the training was too basic. This made it hard for them to secure employment as some of these companies would still require them to have a few years of practical experience in the relevant field.

"I actually took a specialist dip (diploma) in IT security because I was already in that line, right in my previous company, and I just want to have that little piece of paper...I have the skills, I have the knowledge. Frankly, at the end of the specialist diploma in IT security, the content covered, I'm very sure, you go and find any job, you will not be able to be an IT specialist. No way. Because I'm already in it right, I'm practising it already. There's no way because the content is just far too basic to be able to you know...it's like go into the company and say *'Hey, you know I can do the job. I'm now an IT security specialist'*, no way. Way...way below. Perhaps that's one

reason [for not being able to find employment].” (P30, mature worker with caregiving duties, 62 years old)

“The company wants someone who has experience in it for five years. It’s like you just come out, what experience you got? You know, so it’s redundant...my diploma.” (P28, mature worker with caregiving duties, 52 years old)

**Having to Keep Up with New Technology and Lack of Support.** Mature workers shared that they must learn and re-learn new processes and new technologies that are being implemented at their existing workplace or when they transit to new jobs. This was a challenge for them as some of them felt that the training is inadequate, and they were often left to figure things out on their own.

“I just changed my division one year ago, to do a new type of job and now I’m still learning after one year. I’m still like quite new...so everything now is like self-learnt. When you ask someone, is like what she said, read up yourself you know, there’s not actually like last time really demonstrate for you to see. Now is like *‘ok you read up yourself, I give you the instruction, okok you go read yourself you know, whether you know or not then just see how’.*” (P16, mature worker, 50 years old)

### ***Theme 3: Balancing Personal Commitment and Professional Demands***

**Restricted Employment Prospects to Manage Caregiving Duties.** For participants with caregiving duties, they shared the struggle that they faced while simultaneously attending to their caregiving responsibilities and staying in employment. Participants shared they had to shift to part-time employment as they needed to devote more time to caregiving as they have no additional help (e.g., being the only child to elderly parents) or were unable to find alternative caregiving arrangements (e.g., infant care).

“I mean there are shortage of infant care and there are shortage of child care... I want to seek for a job so I need to have proper arrangement for my daughter. I actually call the infant care to ask, *‘do you have a place a vacancy’*, they say *‘you will be on the waitlist’*. My next questions is *‘Ah, how long is the waitlist?’* I’m like 100 plus mother on the waitlist.” (P24, woman with caregiving duties, 34 years old)

One participant shared that while she is trained in the IT field, she has to find employment that are not relevant to her field as there were limited jobs that allow for part-time.

“I have searched high and low for something in a similar space since I’m familiar with that area but it’s very hard. I think those who have done project management will know, there’s no way you can be a part time project manager. Doing remotely from home, having flexible working hours, there’s no way. So eventually I resorted to doing small...small little things here and there where wherever I can lay my hands on. I even tried doing things like mystery shopper because it’s only a few hours a week, go out do the job. But forget about the pay, it’s very hard. I find that to do part time and having flexi working hours...that was the main challenge.” (P30, mature worker with caregiving duties, 62 years old)

Similarly, a few participants shared that the nature of their work made it impossible for them to continue providing care while working and they had to leave their job.

“So (for) part times...even in the context of healthcare for local is actually quite low rates as well and you need to log in the hours fixed and such that I can't juggle my caregiver role as when I need to get away because as a clinician you can't abandon our patients upfront but you also have your role as a daughter to somebody. So, it's like who should I actually care for? I think my loved one will be the priority. Because of that I have to give up my clinician expectation and my duties as a clinician. I think most of the frontliners, if I may speak from their behalf right, I think everyone is actually struggling on it. Because your patients do have a certain expectation on you, and they are all caregivers as well. And you are also a caregiver to your loved one. So, it is actually very challenging for the frontliners to stretch themselves to the maximum.” (P27, mature worker, 47 years old)

A few participants shared that they had to quit their job as the care recipient's condition have deteriorated and needed more caregiving.

“I actually quit without a job last year. Because I couldn't take it anymore because I'm actually considering putting up a CCTV to monitor my mum and the helper. She actually fell down from the bed and when I saw it on the CCTV, I actually just resign at that spur of moment. Because I just couldn't take it anymore.” (P18, mature worker with caregiving duties, 52 years old)

Having either to quit their jobs or to take on entry level roles in order to cater to their family commitments, a few participants indicated receiving significant pay cuts.

“I actually decided to just quit my job and then take up a very low pay one, which give me regular hours so that I can be on stand-by for when, because my mum she has to go for like, bi-weekly medical visit, then my dad and then my niece is just starting to go to school.” (P18, mature worker with caregiving duties, 52 years old)

**Concerns Over Job Security.** Participants also shared their concerns over their job security due to their caregiving duties.

“I'm actually in my fifties already and then my mum the option of like getting help to assist her...it doesn't work. We tried and then she is not receptive. She has massive depression and then she has seizures. I'm actually always constantly very worried that if let's say I don't have a good job anymore then I don't have any source of income to actually continue providing her.” (P18, mature worker with caregiving duties, 52 years old)

“My colleagues are actually physically working at their desks and I'm actually the one who is like a deserter to them but I'm actually the one supporting them you see. So, it's actually a private arrangement between me and my boss but then like I said I don't know how this arrangement can last. So, it's like I always feel very insecure. What if let's say this job no

more than, what can I do next.” (P18, mature worker with caregiving duties, 52 years old)

**Experiencing Stress when Managing Dual Responsibilities.** Participants expressed that they experienced inner conflict with themselves as they juggle to fulfil their role as a mother while trying to maintain a successful career. Some of this stress also stems from the high expectations placed on women in fulfilling their caregiving roles.

“I think maybe in terms of like balancing caregiving with work, I think there’s also like internal tension within like maybe myself like to want to do the best of both worlds. Like to want to both excel at caregiving and also at work. So maybe if let’s say in terms of bringing up kids, maybe at first, we may be reluctant to like base them in other childcare options or so-called delegate their caregiving duties because after all we want to be there for our children. So, I think sometimes there’s also that tension that we have to overcome and some reality that we have to face and need some hard work on our own part.” (P21, woman with caregiving duties, 25 years old)

“Life is still full of struggle and challenges. Especially these few years. I’m also trying hard to be a good mum and take care of my family, hoping to fulfil all my commitments well.” (P29, mature worker with caregiving duties, 50 years old)

Participants also expressed that some of their workplaces lack compassion for their circumstances, leading to questioning and scrutiny when they need to take leave. This added stress that they experienced is also influenced by the necessity to have their colleagues help cover their work during their absence.

“My mum for medical appointment, my dad for clinic. My department is not happy, the HR is also not happy because I’m always applying leave like half a day and half a day. So I got questions like ‘*when you’re on leave, who is going to cover your duties*’ because you’re looking after an estate so you cannot just leave it alone. We all have buddy system so if let’s say your buddy is not around then who is going to cover your duties and you have a group of colleagues and workers to look after for that period that you are not around right, they are not doing their job and then you still have to write report.” (P18, mature worker with caregiving duties, 52 years old)



## Perceived Facilitators for Finding Employment and Staying in Employment

To find out the facilitators for finding employment and staying in employment, the following questions were asked:

- What are the factors that have helped you in finding a job?
- What are the factors that made you want to work longer in the company?
- What are the working arrangements/working conditions that you think were good in supporting you as a mature worker/woman with caregiving duties?
- What were some HR policies that were implemented that you think were helpful for you as a mature worker/woman with caregiving duties?

### **Theme 1: Staying Relevant**

**Acquiring Industry-Relevant Skills.** Participants expressed that the success rate of finding employment also depends on whether one has the relevant skillsets that are required by the market. A few participants have also tapped into the various government initiatives to upskill themselves and found those initiatives which provided internships/emplacement were helpful for them to transit to a new industry.

“The skills that you have at that moment require in the market. So, for example, I learn cybersecurity right, now is a piece of a hotcake in the market and a lot of people know that you know this, they will want to talk to you on this topic first, whether you are really in-depth in this area, but at least they talk to you to see whether you are able to have that kind of level to join the company. At least you get yourself a higher chance of getting an interview.” (P11, mature worker, 53 years old)

Not only is having the relevant skillset important, but one participant also shared that it is crucial to showcase the skillset through the projects completed.

“What I learn from my mentors or tutors is that they always say to build a portfolio, you don’t just let your resume speak for you really need to showcase your projects you know, and you have to show them you can value add so I agree with him in this aspect.” (P15, mature worker with caregiving duties, 45 years old)

**Having a Strong Professional Network.** Participants highlighted the difficulties for them in finding employment through the traditional route of submitting their resumes to organisations. They highlighted that having a strong professional network opens doors to job opportunities as they have higher chance of getting employed through referrals and connections.

“I think someone mentioned that it depends on like who you know or as in people putting in a word for you. Even if say I were to apply blind. They don’t know me or anything. They might not accept, but then if somebody important enough in that company said, ‘*Ok, can you just give her a chance*’ because that’s what’s happening with me now. So that’s why I am saying. They will actually fast-track all the interviews and tests and so on. I don’t know of course if I’m going to get it. But the thing is, even that first thing

wouldn't happen if another person didn't talk. So, you have to be lucky enough to know the right person." (P7, mature worker, 53 years old)

"The right people at the right time because it is important for us to get connected with our previous, you know, our ex-colleague or our bosses. You know it is always important to maintain relationship. It comes in handy when you're out there looking for other opportunities, I mean when you have the connection right, you will also feel comfortable to reach out to them So, I feel networking and maintaining relationships." (P15, mature worker with caregiving duties, 45 years old)

**Adapting to Career Transitions to Remain in the Workforce.** Few of the mature workers highlighted that as many mature workers tend to hold higher positions in the past, it is important to recalibrate their expectations. For example, adjusting to new employment which may be of a lower position or gig work as well as being open to learning would help mature workers to keep up with the industry trends and stay in employment.

"I guess there are a lot of self-adjustment mentally, because I guess, to be honest is quite not easy for everyone to say that maybe last time, 20 years ago, someone is hiring, holding a high position, director level but because as I age I am not able to command that kind of salary or whatsoever, but I'm a very experienced worker but yet, unfortunately, there's still this mismatch between the recruiter as well as the one who get recruited because I guess is just how a developed country is now doing it so um I think this is really the reality for all the mature worker and everybody will have to go through that stage." (P13, mature worker, 55 years old)

## **Theme 2: Flexibility as a Workplace Norm**

**Providing Spatial and Temporal Flexibility.** Many of the participants shared that they appreciate the flexibility that their organisations have provided for them in terms of *spatial flexibility* and *temporal flexibility*. This was important for both mature workers and women with caregiving duties as many participants shared that the flexibility provided allowed them to attend to their personal matters and commitments such as medical appointments and caregiving responsibilities.

"My current job...the space is rather flexible, so I need this flexibility for my primary school daughter. Because the primary schools...the hours are a bit not here, not there. Yeah so, I need this kind of flexibility." (P24, woman with caregiving duties, 34 years old)

"Yes, we have parents who need our help, and we are doing some caregiving especially since they have a lot of medical appointments. And our annual leave might not be enough. So, good that they give us the flexibility, we can, means on certain days, we could work extra hours on a certain evening to compensate the time-off that we have taken to bring our parents to see doctors." (P3, mature worker with caregiving duties, 53 years old)

Similarly, a hybrid work model where employees are allowed to work from home was also perceived to be beneficial to those with caregiving duties.

For the past few years, I switched from working on-site to becoming mainly from home as a part-time tuition coordinate-coordinator. My boss actually runs a tuition agency, and he needs help from me to do tuition matching for his group of tutors under him. My timing is quite flexible...because past few years my mother-in-law is having the early stages of dementia.” (P29, mature worker with caregiving duties, 50 years old)

**Providing Flexible Work Options.** For both mature workers and women with caregiving duties, having flexibility in their job was also one of the most mentioned factors that they look for in a job. Mature workers shared that they no longer prioritise career progression and the flexibility offered in their job supports their preference for more “work-life balance” as they move to a slower pace of work that is less stressful and manageable, earning a stable income while allowing them to pursue other personal interests.

“I felt that I have already worked like 30 over years paying full attention on building a career when I think everyone goes through this stage, career, career-minded, we want to climb, and we want to achieve director level or run our own company. I think I have been there, done that and I also want to spend my remaining, because I won’t know how long I’ll live, I’m going to leave I would also want to spend my remaining like you know maybe the next 10 to 20 years to actually spend time, quality time, with my family members and loved ones but yet staying employed.” (P13, mature worker, 55 years old)

“I kind of moved to the administrative part and what I like is actually my life status priority has also shifted to actually pay more attention to my loved ones, my personal time because after all, I’m already growing older by the day and also recognising, self-recognising that my stamina may not be there compared to someone who as young as like maybe 10 or 20 over years old.” (P13, mature worker, 55 years old)

For mature workers, career progression was not stated as a reason for continuing employment. Instead, reasons for continuing working include “keeping the mind stimulated” and “keeping an active lifestyle” as they “don’t want to fall into dementia”, “the social element of being with colleagues”, “knowing what’s happening around the world and Singapore”, “making themselves useful” to “contribute to the society” and “having an identity to feel good about themselves”.

For those with caregiving duties, flexible work options such as providing part-time opportunities or temporary contracts helped them continue to stay in employment while allowing them to focus on other priorities.

“I am working part-time, so, I only work 3 days, so I have the other 2 days where I can do other things that I like or do things for my family, especially my mum that is staying with me.” (P4, mature worker, 58 years old)

“I got a boss like kind enough to offer this temporary job. What happened is that when I quit my job full time, I don’t have income...my mum’s medical expenses are actually very high because she’s actually on a non-standard drug. So my boss actually allowed me to stay at home to look after her and it’s only like when she’s asleep or I don’t have to monitor her then I do my work.” (P18, mature worker with caregiving duties, 52 years old)

Some mature workers shared that as they aged, they experienced lower stamina which affected their job preferences (e.g., slower pace of work, shorter hours, part-time work).

“I actually move from my previous employment I was handling marketing so I realised that age does matter as I play as I grow older, I realised that my own stamina may not be able to kick up off of those fast-paced work which is marketing.” (P13, mature worker, 55 years old)

“I think it’s challenging in terms of the hours currently. I think as you get older, it gets more and more strenuous. That’s why I find that I think when I was younger, of course I could stay up quite late but I find that increasingly it’s getting very tiring for work. So, and of course, with the caregiving duties at home, that’s even more challenging I find.” (P26, mature worker, 53 years old)

Based on the results of the quantitative survey, it was found that less than half (48%) of 601 employers surveyed have implemented flexible working arrangements that work for both employer and employee in their organisations.

### ***Theme 3: A Workplace Culture of Respect and Empathy***

**Recognising the Value of Mature Workers.** For mature workers, it was also important for them to be in an age-inclusive work culture where they are respected for their experiences in the organisation.

“I work for my company ever since, actually when I first graduate. I worked for 6 years. After that, I actually left the company and worked in other companies and end of the day, I went back to that company again and worked for another 4 years, so total is 10 years. So basically, why I go back is because of the culture of the company where the boss treats the employees just like a family.” (P5, mature worker with caregiving duties, 47 years old)

“Oh, instead of my surname, they call me Aunty X [redacted]. So, every time they need my help, they will call me and when they have any event or that, they will always remember me first.” (P8, mature worker with caregiving duties, 60 years old)

**Empathising with Employees’ Needs.** Many of the participants perceived the flexibility at work to be largely enabled by their supervisors. Participants shared how their supervisors were empathetic to their individual circumstances and trusted them to get their work done without micro-managing them.

“You don’t have to be like micromanaged and you don’t have to worry that ‘Oh is this nine o’clock...I have to be on my computer now’ which maybe I am actually changing my mum’s diaper that kind of thing. So, for me is like as long, as long as you get the job done, and then as long as he actually sees the result, and everything goes smoothly then it’s actually okay.” (P18, mature worker with caregiving duties, 52 years old)

“Because my boss is actually quite understanding and trusting. So, he trusts that I would meet my job quota while trying to fulfil my family commitment as well. He’s also very understanding that I have my caregiving duties ah. At times I mean, I maybe a bit unable to fulfil his expectations, he is also willing to be lenient and understanding. That’s what I appreciate and I continue to work for him.” (P29, mature worker with caregiving duties, 50 years old)

Women with caregiving duties were concerned with having their colleagues cover their work when they must apply for urgent leave to attend to family emergencies. Hence, having supportive colleagues was important to them.

“Let’s say certain thing happen, like if he has a fall or something, then I think they did offer to say like if you need help with your certain work, something that’s urgent, they are willing to take on the extra duties on behalf.” (P20, woman with caregiving duties, 39 years old)

A work culture that is caring towards its employees and promotes work-life balance was mentioned to be one of the important facilitators of staying in employment.

“To know that you have a caring environment rather than you know, you’re just one labour unit, FTE (*Full-Time Equivalent*). I think a win-win solution for a company is really a company...who shows the employee that you’re being valued, and of course then the employee has to be contributing. So, my experience has been very good.” (P19, mature worker with caregiving duties, 52 years old)

“I was a stay-at-home mum for quite some time and when I went back into the workforce, I was very worried about, you know, people were saying, ‘oh, you never leave before 7:30’. And you know, I was worried about just the adjustment to that, but when I went into my first company, 6 o’clock everybody wants to go home. That was really, really nice, you know, and I really did appreciate that.” (P2, mature worker with caregiving duties, 53 years old)

### Desired Support for Mature Workers and Women with Caregiving Duties

The following question was asked to find out the type of support the participants hope to receive when they find employment:

- What do you think can better help you to find a job?
- What changes do you hope to see in your company that could better support mature workers/women with caregiving duties?

### **Theme 1: Promoting an Inclusive Society**

**Addressing Ageism in Hiring and Protecting Mature Workers’ Rights.** As highlighted in the earlier section, mature workers faced hiring bias and age discrimination. Participants hope more could be done in ensuring mature workers receive equal opportunities and having a more transparent hiring process.

“I don’t think is only awareness. If you try to change it with awareness, and like maybe you talk to the HR people. You say, ‘*Can’t do this, right?*’ But nobody is monitoring it. The sentiment is there, the ageism, the racism, the whatever-isms are there, you know, it will continue. So, it needs to be, there needs to be some form of checks in the system. Whether it’s random or not, right, for people to say, ‘*Hey, I was really in alignment for this job. Why didn’t I get this job?*’ And to trigger some, you know, some, some evaluation of who got the job? Why they got the job?” (P2, mature worker with caregiving duties, 53 years old)

One of the participants who has witnessed unfair dismissal at her workplace suggested for processes to protect their rights; for example, to have independent agencies administer and audit exit interviews and to keep feedback to the organisation anonymous.

“Maybe the Exit Form is not to the company. Maybe the Exit Form should be to TAFEP. Someone that can keep it confidential but really need to tell the company that oh I have this feedback that comes from who & who. No need to say the name also.” (P5, mature worker with caregiving duties, 47 years old)

**Creating Awareness of the Responsibilities of Caregiving.** Some of the participants highlighted that they hope for their colleagues to be more empathetic to their circumstances and understand the struggles they have as a caregiver. Participants suggested that such understanding can be fostered through various HR initiatives such as “Bring your loved ones to work”, caregiving workshops, and home visits.

“Bring your kids” or whatever so it could be like “Bring your loved ones out”. Then your colleagues can also understand best because you can say that ‘*Oh I’m taking care of my father this and that*’, but then they don’t know how challenging they are to manage. Like I mentioned, my dad has dementia, so maybe when they see how he behaves, how he walks etc, so then they may you know, be more understanding when I say ‘*Hey, something happened, you know, he’s already progressing worse, I need to take care of this.*’ So then they could be more understanding. (P20, woman with caregiving duties, 39 years old)

“I think to implement at a so-called company level is also good in a sense that it’s more for educating your fellow um team member so that if let’s say if anyone has some caregiving duties needs to be away, they can be more empathetic.” (P20, woman with caregiving duties, 39 years old)

## ***Theme 2: Bridging the Gap Between Skills Acquisition and Employment***

**Incorporating Internships and Apprenticeships in Upskilling Programmes.** While participants shared that they have benefited from the SkillsFuture initiative, one of the most cited issues was the difficulty in finding employment even after their course completion. Participants suggested that training providers should not only signpost them to potential employers but also collaborate with industry partners to offer internship opportunities. Such internship opportunities provide a platform for them to apply their knowledge to real-world practical settings.

“I’m very appreciative of SkillsFuture because I have used up my SkillsFuture but how relevant are they considering the change...the dynamic changes, the change in everything. As well as how can we get that bridging done? I mean it’s ok that the government is like willing to subsidise up to 90% and then the people saying that 90% they did this, they did that. But I think seeing the relevance and helping them put it back, or you know can we have like a holding period where there is some job that we can do in between while we transition to something more to filler. So now we are like I got the skills already like so mature internship or apprenticeship or whatever just so that we can bridge it back and then make the transition back to maybe full term or something that is more amenable.” (P23, mature worker with caregiving duties, 54 years old)

### ***Theme 3: Implementing Needs-Specific HR Policies and Support***

**Offering More Varying Employment Contracts.** Many of the mature workers highlighted their preference for part-time jobs as they prefer flexibility and that it is less stressful. Given the different needs, participants suggested that organisations explore part-time or freelance gigs. One participant shared her observation of ‘job sharing’ practices which provide employment opportunities for mature workers. Other participants were supportive of this suggestion as they felt that they could better balance their caregiving responsibilities and work.

“I have from a friend who lives in Adelaide. In that region I, because I think of job shortages, they actually encourage part-time working. What happens is that of five days right, they will have like two person doing five day’s work. So maybe one do Monday, Tuesday, another one will be like Wednesday, Thursday. And Friday maybe they alternate or something. So it’s a part-time arrangement and in fact, for them there’s no incentive to do more because they are actually going to be penalised by income tax. That is really to help more women who have constraints to be able to manage both.” (P19, mature worker with caregiving duties, 52 years old)

“I think it’s actually good idea. It will actually help like people like me. I have like elderly and children to take care of. Working alternate days right, then it’s actually much easier for me to juggle. And I will feel more comfortable if let’s say I get a helper to look after them for the day. And then I do it alternate.” (P18, mature worker with caregiving duties, 52 years old)

Being a caregiver places demands on their time and energy. However, participants also shared that they will also need to continue working to meet their financial needs. One of the suggestions provided by participants was to have a platform where they could look for freelance jobs and see how they could fit into their schedules.

“It needs to think out of the box which such platform or system could allow dynamic workers to come in. Something like Grab but in a different service format or even like in the handyman format right, in the handyman resources. You go to PropertyGuru I think they have one platform, that allow you to search for what, cleaning...what handyman, whatever, plumbing services, you can just mix and match. Something like a matching system. Then people can adjust their life and still work for a living and serve their

priorities until they are ready after this phase right that they could go back to the full-time employment.”

“If MOM has an employment exchange kind of portal, then we can register it there and then interested employers can have the connect, contact, connect and say *‘Ok we have a pool of this people from this industry with experience.’* We can put up our resume or data, database or whatever in the database and then you can be cold call and then straight away just for that transition.” (P27, mature worker, 47 years old)

**Providing More Healthcare Benefits.** In terms of healthcare benefits, mature workers hope for organisations to organise more health talks, subsidised health screening packages, and to provide funds for them where they could purchase health supplements. For those with caregiving duties, they have suggested that such benefits extend beyond their spouse and dependents (e.g., parents, grandparents). Participants highlighted that they tend to focus more on their health as they age. By providing such health benefits, it adopts a preventive approach to help them stay healthy.

“One of my previous companies actually has support for health screening, the full health screening because it is not cheap. It’s like \$200 something if you have to go. So some other companies do not support that. I truly think that it is very useful especially when we are mature ladies, we need to have health screening. If the package is not there, I wouldn’t take the initiative to do it. The other one is the medical benefits that they give you the lump sum. They actually put it in a way that you can actually use the money, as long as it is under your name, on any facilities that benefit your well-being. So, you don’t have to spend it on doctors (or) on medical. As long as you can prove that you are you know, buying a bicycle for exercising, you can fully utilise the sum of money. It helps you to keep healthy.” (P5, mature worker with caregiving duties, 47 years old)

Health and wellness support were also commonly practised in most organisations according to the survey results, as 42% of employers surveyed indicated providing this benefit in their companies.

**Implementing Pro-Family Leave Systems.** Participants shared they hope to see improvement in the leave systems that could recognise the demands of caregiving and able to better accommodate employees who need to take time off to take care of their children or parents. For example, participants have suggested that parental care or family care leave be compulsory for all organisations to adopt and for family care leave to not have an age restriction.

“I think the parental leave is not a compulsory thing by the government. It’s whether your company gives you. I think the government should it put in there but they know that’s a lot of ageing, we are all most of them are looking after ageing parents.” (P28, mature worker with caregiving duties, 52 years old)

“Family Care Leave, once your child hits 18, or if he is 12, you are not, you cannot use for them. That means if your child is sick, you cannot take Family Care Leave to look after them. So that is the down downside of it. I mean regardless how old your child is, when they are sick, the parents either one

will have to take leave to look after him, even though they say they don't need to be looked after. You still, rather be at home to look after them. So that is the downside which hopefully the policy can change. Because that one, that one is not right. It's Family Care Leave but there is an age restriction to it. So that makes it very difficult.” (P6, mature worker with caregiving duties, 56 years old)

**Assigning a Buddy to Facilitate Learning.** Participants shared that there are instances where they had to learn on their own and find out answers on the Internet, and highlighted the lack of guidance in learning. They preferred more hands-on training and guidance from their colleagues. Participants suggested that organisations assign them a buddy to help them to learn new processes and technology.

“The organisation I was part of has this buddy system because the job actually was very sensitive dealing with government and political, so buddy system really helps. Especially when new employees come, they will see the mud on the ground and it was very challenging so, they need to be hand-held for a case few so they can get them into these situations and challenges, buddy system really helps.” (P15, mature worker with caregiving duties, 45 years old)

This is in alignment with the survey results where only 29% of 601 employers expressed that their organisations offered inter-generational mentoring programmes.

**Organising Workshops on Caregiving.** As the demands of caregiving increase, participants hope for organisations to arrange workshops to improve the caregivers' knowledge and skills. Some of the examples provided by participants include first aid skills, self-care for caregivers, and taking care of people with different conditions (e.g., dementia).

“is there any caregiving course that the company can provide ad-hoc as well. So because it's always people associate women with caregiving but the men can do it as well. Yeah. So then maybe instead of just assuming or what then do it at a company level like at least, at least educate them. So not just caregiving, it could be some first aid things that people should know.” (P20, women with caregiving duties, 39 years old)



**Having Structured HR Conversations on Retirement Options.** Participants shared the importance of HR to engage mature workers in their career planning and retirement plans. Participants agreed that HR professionals would need to be trained in coaching to help mature workers identify the skills they need to stay relevant and have conversation with employees on their retirement plans, ideally 5 years before their retirement age.

“So in terms of career planning, the word “career planning” and “career development” somehow wiped out of our vocabulary when you hit a certain age right. After a certain age, it’s like employers are not likely to invite you for a sit down and say *‘Hey let’s talk about your career planning or your career development. Where do you see yourself in the next 5 years?’* Because no more runway. Then ironically on the other hand when talking about retirement age being extended to X number of years, whatever age because you have less and less people.” (P23, mature worker with caregiving duties, 54 years old)

“Like a pre-package for you, maybe 3 options like because different people have different needs. Some people may have elderly to take care of, but some people may have lost their parents at a young age. So maybe there’s 3 options for them to choose, like, *‘5 years down the road, do you wish to have 10% cut, but you have how many more days.’* At least you are looking forward to *Ok, next time I am going to head this road’*, you see. Or the other one is to continue as you are. Or the other one probably is to switch to part-time. But this is not a fixed thing but at least there are 3 options for you to pre-plan. And for, also for the HR to pre-plan what is moving forward, to hire someone to take over, part of your role, and things like that, which is good. At least you anticipate that kind of like, *‘I am going to get a 20% cut in 5 years’ time, but I am going to exchange for more leave.’* And then I still can keep my job. And the company still can, still can plan for, you know, like yeah, plan for, for like new, new hires or whatever. I think that is a good thing.” (P5, mature worker with caregiving duties, 47 years old)



## Chapter 6: In-Depth Interviews and Survey with C-Suite, Hiring Managers and HR Leaders

Parallel to the FGDs, we also conducted interviews with Human Resource (HR) leaders to gain a more comprehensive understanding of the challenges faced by the organisations in managing the local ageing workforce as well as the various HR policies implemented to promote an age-inclusive workforce. A survey was also conducted with 601 C-suite level, hiring managers and HR managers across sectors. More specifically, we examine (i) the challenges that they faced with an ageing workforce, (ii) the impact of an ageing workforce on their organisation, (iii) the changes in the HR policies and employment practices concerning recruitment, development, retaining and exit for mature workers and (iv) the organisational approaches adopted in strategic workforce planning to address the ageing workforce. The research methodology employed to tackle the research questions presented by this project is found in Appendix C. Subsequently, section 6.1 will analyse the results of the data obtained from the interviews.

### 6.1 Findings

This section highlights the challenges and concerns faced by employers when hiring or managing their older workforce. Subsequently, we determine the approaches and procedures that they have innovated to address these issues, including their organisational initiatives to recruit, engage and retain mature workers. The final section establishes some of the proposed actions designed to assist mature workers through retirement. Table 4 summarises the themes and categories determined from the HR interviews, complemented with insights from the quantitative survey.



**Research Question 5: What are the challenges that accompany an ageing workforce and are there ways to cushion the negative impact?**

**Challenges and Opportunities with an Ageing Workforce**

*Higher business costs*

- Increased manpower cost
- Perceived increased in productivity-pay gap

*Facing resistance to organisational changes*

- Skill gaps in mature workers coupled with resistance to upskilling
- Lack of digital skills slow down digital transformation

*Valuing the strengths of mature workers*

- Higher organisational citizenship behaviours (OCB)
- Accumulated experience and knowledge
- Extensive professional networks

**Approaches to Address the Ageing Workforce**

*Workforce planning and retirement projection*

- Prioritising hiring younger workers
- Ensuring business continuity through skills and knowledge transfer

*Leveraging technology to mitigate the impact of ageing workforce*

- Use of technology to manage manpower crunch
- Use of technology to foster age-inclusive work environment

**Research Question 4. What are the policies and practices to plan, recruit, retain, and develop employees to address an ageing workforce?**

**Initiatives to Recruit**

- Ensuring fair hiring

**Initiatives to Attract and Retain**

- Providing more medical/healthcare incentives
- Implementing flexible work arrangements
- Implementing flexible leave entitlement
- Supporting mental wellness

<p><b>Initiatives to Engage and Develop</b></p> <ul style="list-style-type: none"> <li>• Implementing engagement surveys/feedback systems</li> <li>• Creating opportunities to engage in mentorship roles</li> <li>• Offering training opportunities</li> </ul> <p><b>Initiatives to Support Retirement</b></p> <ul style="list-style-type: none"> <li>• Offering part-time employment options</li> <li>• Offering re-employment options</li> <li>• Extension of health insurance benefits in re-employment contracts</li> </ul>
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Table 4: Themes and Categories for Employers

### Challenges and Opportunities with an Ageing Workforce

We begin our interview by investigating challenges encountered by hiring managers as well as their perceptions towards mature workers. Semi-structured interview questions pertaining to this topic are:

- What are some of the challenges that the organisation face with an ageing workforce?

We also examine the positive impact that an ageing workforce can bring to businesses and organisations. The question asked to interviewees was:

- Do you think ageing workforce, as compared to younger employees, is more like an asset or a challenge to your organisation? Why?

#### **Theme 1: Increased Business Costs**

**Increased Manpower Cost.** One of the biggest concerns that employers face when considering the employment of mature workers, is the high cost associated with their employment. The cost of employing mature workers exceeds that of hiring fresh graduates or younger workers. This is particularly worrying for smaller companies or SMEs who are strapped by a limited budget for manpower.

“the expenses ratio that they hold is quite high as compared to the non-mature workers. So we don’t go overboard also, we do have to take into account the budget, our budget in terms of manpower.”

“the limit of CPF contribution increase. So it will be a further increase in the amount we have to pay ...Because usually mature workers their salary is higher so...those who previously we don't have to pay because they hit the limit, now we have to pay ...Yeah, so it will further, so this will definitely be a major expenses to our company because we...our budget is not enough.”

Furthermore, because of an ageing workforce, employers will have to invest more into their employee’s healthcare insurance, which contributes to the overall cost of employing mature workers. Increased medical costs may act as a deterrence in employing mature workers. Poorer health conditions of mature workers are also perceived as a liability in terms of the associated medical costs.

“I think an ageing workforce, I think first of all, there's a higher cost of our health care insurance, right? Because you know, they see the doctor more often right. And then in my company we not just cover the employees, we cover their dependents as well. Yeah...of course there's a higher cost of you know health care that the company needs to absorb — health concerns, higher health premiums.”

Increased cost of benefits (e.g., healthcare) was also found to be a top challenge that organisations are facing as seen in Figure 23 (51% as compared to the average of 47% for all other challenges).

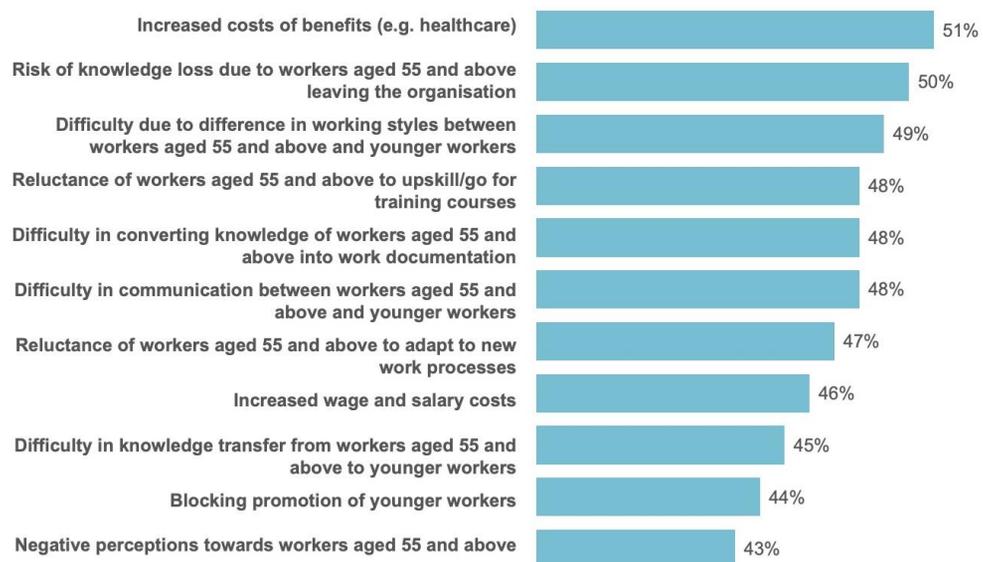


Figure 23: Extent of Challenges Encountered with Mature Workers

For employers with mature workers in the team/organisation, significantly more of them have encountered the challenges listed to a large or very large extent.

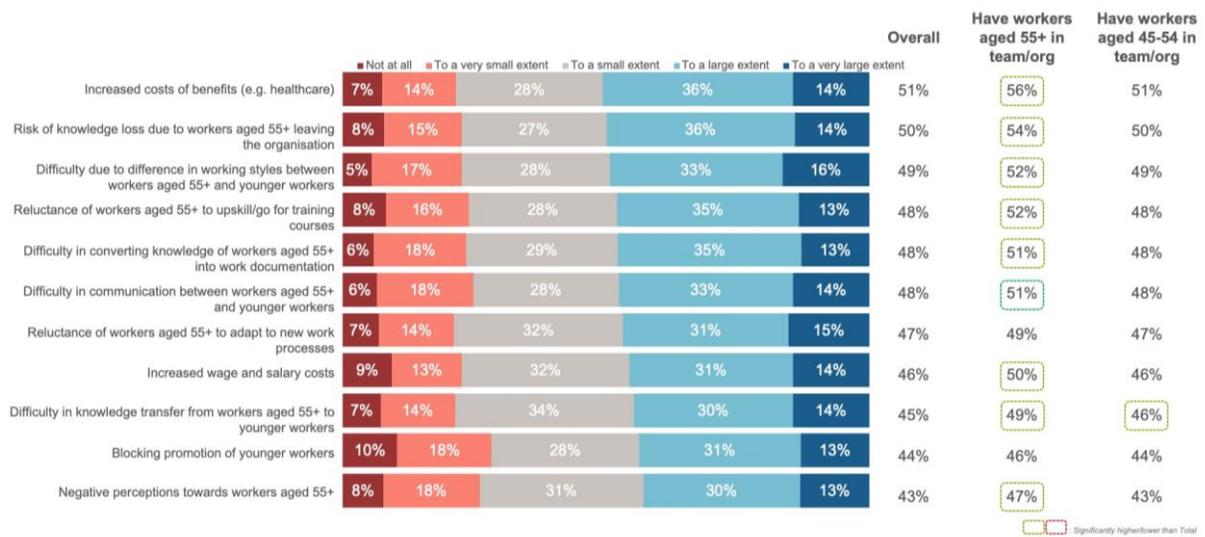


Figure 24: Extent of Challenges Encountered with Mature Workers – Role in Organisation

**Perceived Increase in Productivity-Pay Gap.** An extension of the higher cost of employment, is the perceived low productivity compared to high wage cost among mature workers. To maximise cost efficiency, employers have commented that it is imperative for the investment in employees to produce an equal level of outcome. Some HR managers have expressed their worries regarding the mismatch of mature workers’ productivity levels and the company’s investment in them.

“they do require more expenses...and the amount of work output, it’s relatively lesser even though they are more experienced...But, it’s relatively lesser as compared to the amount of input we put to them.”

“it’s not a cost-effective approach...So that’s why it is difficult to retain them...because ultimately we are aiming for a cost-effective business.”

In general, the most commonly faced challenge expressed by employers would be mature workers being unable to keep up with higher work demands.



Figure 25: Perception of Challenges Faced by Employers with Regards to Mature Workers

However, the perception of the increase in productivity-pay gap could be a stereotype. HR leaders might harbour negative attitudes towards the productivity levels of mature workers and consider them to be less productive than younger workers. This presumption of a lower productivity level in mature workers could be a result of them often having multiple life commitments including caregiving duties towards their children and parents. This might be a cause for apprehension in employers when employing or retaining mature workers as the management and balance of professional and personal commitments becomes even more critical in ensuring work productivity is not affected.

“But we've also realised that at this stage of your career, right? With at-when you're 40 plus, you have multiple commitments in life... I have a family to take care, I have a child to take care, and you drop in school, pick up, household chores to do, and I also have a 10-hour work to do. On top of it, if you were asking me to learn to be relevant, I don't have the time.”

“need to take time off to maybe, you know see to some personal matters, or go to the doctor, and things like that, so that may have an impact on productivity.”

## **Theme 2: Facing Resistance to Organisational Changes**

**Skills Gap in Mature Workers Coupled with Resistance to Upskill.** Mature workers are at risk of becoming irrelevant to the needs and requirements of the current job demands. They need to constantly update their skills to remain relevant amongst and competitive to their younger peers. Participants mentioned that there is difficulty in ensuring their mature workforce continue to upgrade and acquire applicable skills for an everchanging workplace dynamic, such that they do not lose out to the younger generation.

“our problem is not really retention of 40 plus, it is about making them relevant at 40 plus.”

“The second category of people that I see are my PMETs (Professionals, managers, executives and technicians) who are here in the region, whom are not upskilled sufficiently to be able to withstand the competition that they have from their generation X and Y.”

One of the main reasons for why employers are facing an impediment to upskilling their mature employees, is attributed to their resistance to change and a lack of adaptability.

“for a lack of better word, stubbornness. Because they might feel that they have they have been in this industry for quite some time, they know better than us. Yeah and they probably I would say they are not exactly the change agent. Some of them might be resistant to change I would say.”

“There is a huge resistance to move out of comfort zone, move out of their own territories, and that sort of puts them backward, and the ones who are willing to take that risk and move are the ones who are able to land better careers.”

This finding was in line with analysis carried out on the quantitative survey data; where in Figure 24, 48% of the respondents indicated that mature workers in their organisations were reluctant to upskill or attend training courses and 47% of the respondents indicated that mature workers in their organisations were reluctant to adapt to new work processes.

More than half of employers (55%) felt that mature workers in their organisation are more vulnerable to retrenchment. At the same time, more than 3 in 5 observed it is rare that workers aged 45 and above leave their organisation before their retirement age to take on another job role.

**Lack of Digital Skills Slow Down Digital Transformation.** Employers perceive mature workers to have a lower capacity to work with technology. This is especially pertinent to the changing technological advances as organisations are beginning to integrate more software programmes and simplify business processes with digitalisation. HR managers have indicated that mature workers do indeed have a more difficult time adjusting and meeting the requirements to effectively adapt to the new system and software updates, rendering this demographic of the workforce at a disadvantage.

“I think because recently, we digitalise it...our system update. Yeah so they find it a struggle.”

“The effort required by the company to get somebody who is a little younger, to get adopted to technology seems to be lower as compared to the effort

required to bring the mature workforce in line with technology. It looks like there's a little more effort required in those situations.”

### Theme 3: Valuing the Strengths of Mature Workers

While the HR leaders have mentioned various challenges when faced with an ageing workforce, participants also see the value in employing mature applicants. This was also reflected in the quantitative survey where 75% of the respondents agree that not only do their organisations have a clear understanding of the challenges but also opportunities presented by ageing workforce (Figure 30). Employers who had mature workers in their team/organisation were significantly more likely to hire workers aged 55 and above, while employers who had no mature workers in their team/organisation were significantly less likely to hire workers aged 55 and above.



Figure 26: Likelihood of Hiring Workers – Age of Workers in Team / Organisation

**Higher Organisational Citizenship Behaviours (OCB).** Despite having multiple commitments to their families as discussed in the previous section, hiring managers also recognise that mature workers tend to contribute and invest more into the company, often staying after office hours to complete their tasks or take on additional responsibilities when required by the organisation. This is often identified as a contrast to younger workers who are assessed as not being committed to the company.

“The elderly people they are willing to go the extra mile even overtime. You ask the youngster now for overtime, they give you a look. They give you a face, you know? Then they expect a certain reward and incentive. Whereas the elderly people, they just happy with if you make some money and you give them some, they are very happy with it. You know? The commitment is much higher than the younger people.”

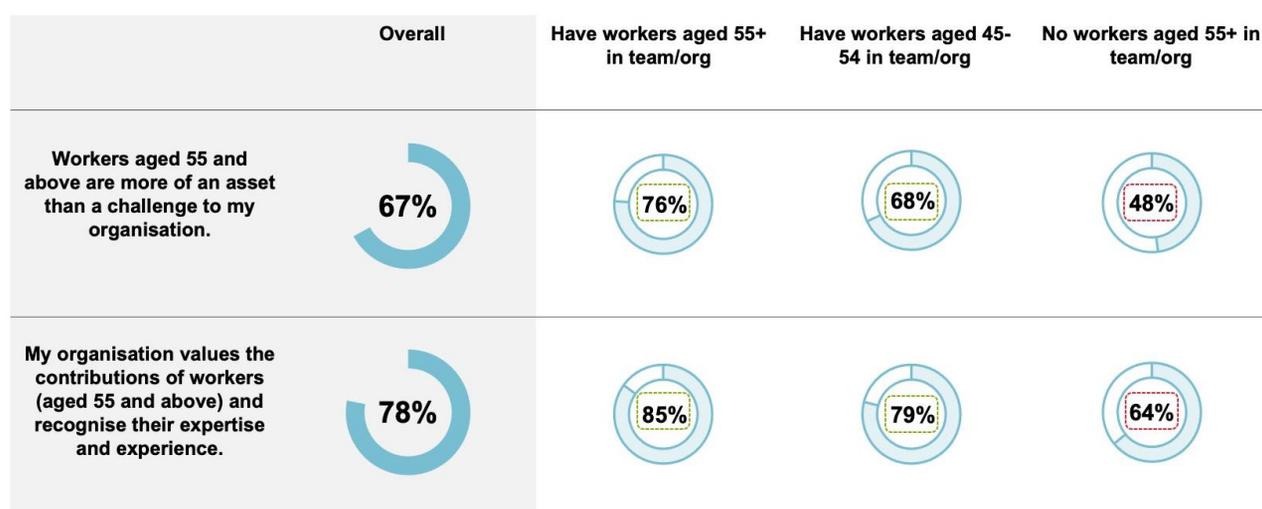


“while we can run with them [younger workforce] as soldiers, you will need a captain, you will need a lead for them to have that direction, because otherwise the whole aspect of entering and coaching will never be there for the younger workforce, and that can come in only from your mature workforce.”

“we treat the older employees as major assets for the organisation because they are actually doing the knowledge transfer to the younger workers. And this is very important because if you want to build Singapore, we need to have the skill set and the...required knowledge to actually work...and the mature workers actually help in doing that.”

From the quantitative survey, 78% of the respondents agree that their organisations value the contributions of mature workers as well as their knowledge and experience (Figure 28). As seen in Figure 27, 47% of the respondents indicated that mature workers have more knowledge and expertise as compared to younger workers (25%). Similarly, 53% of the respondents indicated that mature workers are more capable of being a role model and mentor as compared to younger workers (22%).

Generally, a higher proportion of those with mature workers in their team/organisation agree that mature workers are more of an asset, and that their organisation values their contributions and recognise their expertise and experience; significantly lesser employers with no mature workers in their team/organisation have such sentiments, as shown in the chart below (Figure 28).



 : Significantly higher/lower than Total

Figure 28: Attitudes Towards Mature Workers – Age of Workers in Team / Organisation

**Extensive Professional Networks.** Along with an abundance of experience and institutional knowledge, mature workers garner a rich social network and contacts throughout their career life, which can be instrumental for organisations. It provides

opportunities for organisations to expand their businesses or to generate solutions to unique problems that require one to have the right contacts.

“mature workers because of the number of years they have, a bigger or a longer, you know, network, I would say. A less experienced person might not have that deep connections in the industry.”

“So there is one big benefit is the industry relationship with key opinion leaders. A lot of young workers might not have that kind of stature to go and talk to a senior doctor or a medical practitioner. But because these mature workers have been in the industry for a long time, they do help us open the doors rather easily, and they are also looked upon with a lot more respect as opposed to somebody who's coming with lesser years of experience.”

### Approaches to Address Ageing Workforce

After analysing the challenges that HR leaders encounter with an ageing workforce, we then move on to exploring the diverse approaches that companies have implemented to address the ageing workforce. To assess this, we asked the participants the following questions:

- Can you share your organisation's approach to addressing an ageing workforce?
- What are the short-term or long-term plans that the organisation has to address the ageing workforce?

### ***Theme 1: Workforce Planning and Retirement Projections***

**Prioritising Hiring Younger Workers.** Employers are tackling the issue of having insufficient employees to hire because of high employment cost for mature workers or as a consequence of their mature employees proceeding to choose retirement. Therefore, employers have shifted to sourcing for potential hires from the younger age cohort.

“the limit of CPF contribution increase. So it will be a further increase in the amount we have to pay...Because usually mature workers their salary is higher so...those who previously we don't have to pay because they hit the limit, now we have to pay... so it will further, so this will definitely be a major expenses to our company because our budget is not enough. Then our solution is to outsource to fresh grad.”

“So we are continuously sourcing and searching for the younger staff to recruit before the ageing staff really going to retire. So, our HR is helping us to searching for the new staff actually, younger staff.”

While about 60% of employers indicated willingness to embrace measures that will support a matured workforce, relatively lesser respondents felt that their organisation would be willing to pay employment agencies to headhunt workers aged 45 and above.

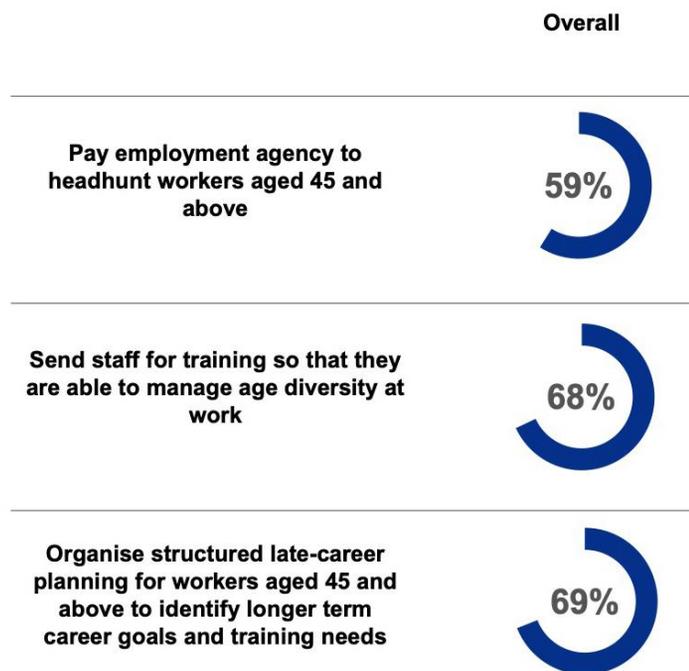


Figure 29: Willingness of Organisation to Embrace Ageing Workforce

**Ensuring Business Continuity Through Skills and Knowledge Transfer.** As mature workers transition into retirement and vacate their positions, it is necessary to train those next in line who will be taking over the vacated role. As seen in Figure 24, half of the respondents surveyed (50%) voiced their concern with the risk of knowledge loss due to mature workers leaving their organisations.

According to the HR interviews, most organisations allocate ample time to prepare for succession training and selecting suitable candidates to take over the vacating role, which is usually completed through mentoring.

“So we got a few traders, young traders and had them trained under him...he’s very clear that he wants to retire this year. So that’s why we immediately got 2 young traders to work under him. Understand how the trading (sic) cycle works, the synergies between different departments, things like that. So, we have a proper succession plan...we always ensure that the mature workers and youngers workers are given a fair lead time in getting into the organisation.”

“even for our operations head, she was 76, 77 when she retired, she also told that you know, she wants to retire and gave us like 6 months’ time to train and upskill someone who can actually take on that role for the future. So it’s always a proper transition in place.”

## ***Theme 2: Leveraging Technology to Mitigate the Impact of Ageing Workforce***

**Use of Technology to Manage Manpower Crunch.** Some HR leaders believe that the utilisation of technology will help to enhance job efficiency and substitute some of the manual labour jobs that mature workers may have difficulty performing. Alternatively, instead of substituting human labour, technology is used to assist the operational management of businesses.

“we do foresee the use of more technology based processes in the future because certain processes at the moment might be a little might be too manual and with process, maybe yeah business process re-engineering, we are hoping again you know get rid of some of these processes and improve the efficiency and productivity of our workforce so that even as we have ageing workforce and the workforce gets lesser, we are still able to cope with the company’s requirement. So that will be, that is something that we are trying at the moment.”

**Use of Technology to Foster Age-inclusive Work Environment.** Participants also shared how they have implemented technology to streamline labour-intensive processes which aim to reduce physical strains and increase productivity of mature workers.

“because a lot of these vocations within the healthcare sector, they require long standing hours a lot of walking around some lifting of objects and things like that. Yeah, so definitely that is supplemented with some of the technological or equipment kind of support.”

“we do have processes that we are trying to make it easier such that the mature workers with their physical limitations like for example they might not be as strong as they used to be, they need to move cartons of items, we give them equipment (sic) to help them move it.”

### **HR Initiatives to Recruit, Engage, and Retain Mature Workers**

Follow-up questions of the approaches to how organisations have accommodated to the mature workforce was discussed. We further evaluate the specific policies and strategies implemented by companies to (i) recruit (ii) engage and (iii) retain mature workers by asking the following questions:

- How does your organisation entice mature workers to join?
- How does your company engage mature workers?
- What are some efforts by your organisation to retain mature workers?

While some employers have created discrete policies to cater to their mature workforce, most have pointed out that their companies do not have specific initiatives targeted at

their mature employees. Rather, their measures are part of a blanket policy that applies to all employees regardless of age.

“In Singapore, no. In Singapore, it's been largely consistent for all associates... we've used the approach of the same policy, consistent for all.”

“is more of like a general workforce if you ask me, is not so much specific to mature workforce.”

“Ad-hoc there are some talks but you know again, it is not really just targeted to mature workers.”

Other HR leaders commented that it would be unwise for them to craft distinct policies for mature workers as preferential treatment could highlight the age difference and further segregate this group of workers from their colleagues.

“Just because you are a mature worker, we don't want them to feel that, *'Hey, you are really special, you are being treated differently.'* So I think, if I'm not wrong, most of these mature workers also expect to be treated consistently. The moment you try to put them in a different category, make them realise that they are mature workers, they themselves feel uncomfortable. So, we don't have any special policies for calling them out as mature workers.”

“Because the moment you start treating us a bit differently, then others start saying, *'Oh, you're getting preferential treatment.'* Then it goes into different directions. Which is why we avoid doing any of that.”



Taking this into account, employers have reviewed the HR policies to be applicable to all employees in view of the needs of mature workers. More than 7 in 10 employers had a positive outlook with regards to their organisation's level of preparedness to embrace the ageing workforce (Figure 30). More employers with mature workers in their team/organisation are confident with their organisation's level of preparedness for the ageing workforce; conversely, less employers with no mature workers in their team/organisation are confident with their organisation's level of preparedness.



Figure 30: Organisational Preparedness – Age of Workers in Team / Organisation

## Initiatives to Recruit Mature Workers

**Ensuring Fair Hiring.** Age stereotypes and unfounded assumptions towards mature workers have been a persistent issue in the workplace. Some HR leaders have expressed their concerns regarding the company's age discrimination practices during employment. This is particularly worrying as those involved in upper management levels generally have the authority and power to either create an age-inclusive workplace or one that denigrates the ageing workforce.

“I had a hiring manager who look at the resume and said, you know ‘*oh it’s a pioneer generation, I don’t want*’ and I felt that it's very sad.”

“Most of the time they see that they are old, they don’t want, they don’t recruit them.”

“We have to educate our managers and the leadership team. Right? I think that is that is very important. Because there is age related unconscious bias and stereotyping, still exists in the workplace.”

Several participants also recognised that official recruitment agencies do not consider mature applicants or candidates for job positions, and hence they do not get recommended to organisations. Mature candidates are filtered out even if there are available job vacancies.

“They only look at qualification, they look at age. The moment they reach a certain age in their mentality, they already strike off these candidates, which I think is very bad.”

“When I met some candidate when I advertised on the newspaper, you know, or the media, then I realised it that some candidate came from WSG and they have written to my company but I never received it. Yeah, so I- I talked to the WSG senior guy. I said ‘*Eh, what is this? Candidate writes to you for my job, you know, but you all never send me. You all send me only 2 candidates, just because you filter it.*’”

Despite facing pushbacks in hiring mature workers in some organisations, HR leaders emphasised equal employment opportunities and hiring policies that demonstrate their age-inclusive practices. Most hiring managers explicitly state their fair employment procedures and highlight that their company recruits based on merit and skills to reassure mature applicants that they will not be excluded on unreasonable grounds or prejudice.

“We said that as an equal employment opportunity provider, we really don’t restrict people based on age or you know, caste, creed, religion, race, etc... but it is- it is purely based on the competencies that you need for a job description.”

“I think we, first is our hiring practices. We, like I mentioned earlier, we pay for the role, the ability to perform the activities to discharge the duty efficiently. We do not discriminate, that is something that we do and in terms of the ageing workforce.”

It is, however, imperative that organisations follow through with their policies and that this group of mature workers are treated fairly, long after being selected to work for the company. Some participants have emphasised that to foster an age-inclusive workplace culture, it has to begin with the top management.

“It has to be top driven and the top driven is in partnership with the top HR leadership, and that gets cascaded to account level management. This is happening because of the organisation culture, because of the leaders who have been here for a long time...It is to do a lot with the culture of the organisation.”

“That means the top has to be supportive, the management, they have to be supportive in in you know, employing they don’t see age as an issue. So then, this has to cascade down all the way to, you know, hiring managers when they are doing their interviews and hiring right. They shouldn’t look at the resume as ‘*oh, okay. This person graduated in 1980*’, you know then put the map, the resume one side.”

From Figure 28, we observe that 67% of survey respondents are of the view that workers more than 55 years old are more of an asset than a challenge to their organisations. Despite the relatively large percentage, employers are less likely to offer permanent position to mature workers than workers who are aged 45 and below (Figure 31). When the hiring managers have mature workers in their team/organisation, significantly more employers would prefer to offer job opportunities to mature workers.

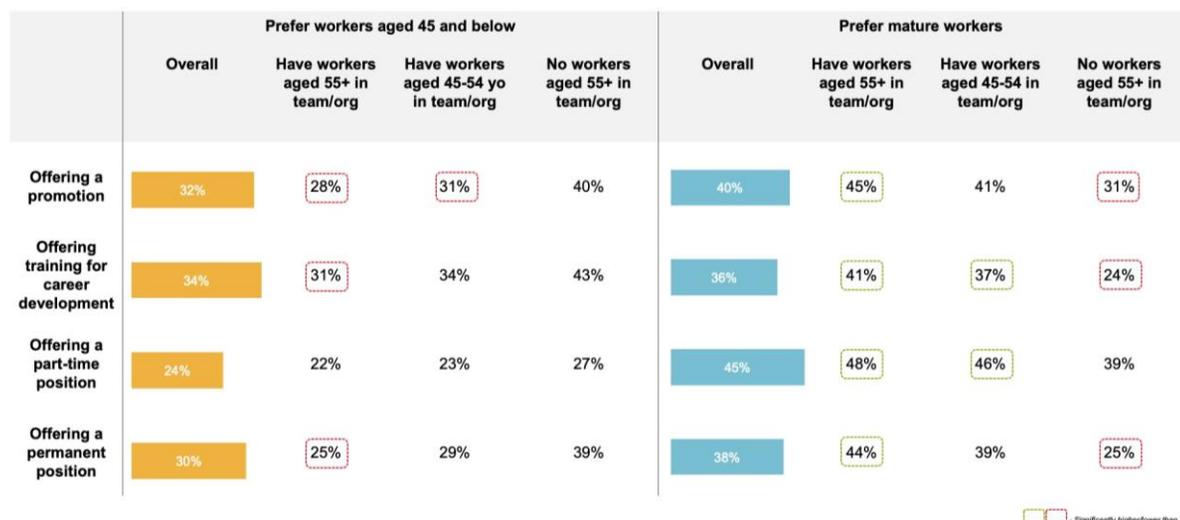


Figure 31: Offering Job Opportunities – Age of Workers in Team / Organisation

When asked if employers utilise any existing government schemes to assist their companies in hiring and upskilling mature workers, employers expressed concerns over the accessibility of applying for government subsidies or schemes. Most felt that they had difficulty sourcing for the appropriate scheme or initiative to register for, while others found it challenging to fulfil the eligibility criteria, especially in the case of SMEs.

“Some of these programmes, for example, the ... early adoptions of the retirement dates, was very tedious to fill up a lot of forms. And yeah, I found that you know the government you know, they want to give you money and yet they make it very difficult for it.”

“I think like one of the things that we did um you know, trying to tap onto the government some incentive scheme...but I think that didn't really work out. Because there's a lot of requirements that the organisation must fulfil.”

“sometimes you navigate WSG (*Workforce Singapore*) right, you don't know where you are, because there's so many things there. One is the eligibility, right? They make it so tough to actually you know, fulfil all the criterias that sometimes halfway through right, the employer just give up. You know, through the process.”

Participants suggested that all relevant grants aiding in the hiring and retention of mature workers should be consolidated onto one central website. This will help ease the navigation process when searching for schemes or grants for the user. The main solution agreed by many employers was to simplify the process for grant applications.

“I would say information. Information sharing. Maybe more accessible. Consolidating maybe all of these different grants into a single website. Because now all these grants are all over the place by different agencies. You don’t know the agency name, you don’t know the grant name you lose out. Right? So, if the government can actually consolidate it and make it easier to access, that will be very useful I would say.”

“To make things simple and easy, you know the government policy for all this incentive claim, they go around and around don’t know which department you know. In the end, diluted, defused, don’t know where is it. So very messy, why can’t they make a central control that let people know, ‘Yes or No’, simple step, check the RoC (*Registrar of Companies*) number, whether you qualified or not qualified, you know. Then, tell people to go to which department. A central area. Now they have so many.”

### Initiatives to Attract and Retain Mature Workers

**Providing More Medical/Healthcare Incentives.** Observing that mature workers may have poorer health conditions, HR leaders have shared that they have implemented better health benefits for their employees. They accommodate to the health needs of mature workers by providing more medical leaves for mature workers or by subsidising their medical bills.

“Mature workers they have two more days of MC without MC so they can just call in sick without the need to produce MC.”

“And then the other is the health and wellness initiatives, you know companies have benefits right but most of the companies have benefits which is like one size fits all but for my company, because they I would say, they actually you know for a certain age this is more suited for this group of people so they calibrate it accordingly. I think that is something I think is also quite attractive.”

“We have this yearly check-up that we run to the workers where they can go for free health check-up. So, they can get a status update of their health and then they are, so that hopefully they make the right decision to take care of their health. We also have a insurance policy where we allow them to go and visit doctors at a fraction of the cost...something to help them out.”

**Implementing Flexible Work Arrangements.** Flexible work arrangements are especially attractive to mature workers due to the multiple commitments they have in life. As discussed previously, having autonomy over work hours can greatly aid mature workers in their employment. Most companies have offered the option to be flexible in terms of workplace or work hours. As seen in Figure 33, less than half (48%) of the respondents' organisations have implemented this measure. Not only that, but it is also noteworthy that participants rated flexible workplace arrangements as the second most effective HR measure that would aid in extending the career runway of mature workers (Figure 32).

“Like if they think they want to work from home still, they can work from home...As long as they know that they can work from home very well. The policy is there to allow them already.”

“If they need to have a flexible time of working, I'm willing to explore. Although I require a 9 to 6, if they need to say 3 days work at home and 2 days hybrid working format, I'm also willing to accept.”

This flexibility is unfortunately not applicable to all mature workers from every industry. For example, a participant from the manufacturing industry brought up that flexible working arrangements cannot be offered to those in the production line due to the nature of the job.

“For those who are in office, we do have a flexible work arrangement. At the moment we also have a hybrid arrangement where they work a couple of days in office and a couple of days from home. But as far as the blue collared workers where they are considered operational staff, then unfortunately there isn't a flexible work arrangement there because the nature of their work doesn't allow for flexible working.”

**Implementing Flexible Leave Entitlements.** Employers are aware that mature workers may have other commitments in life or are carrying out a mid-career switch. Considering these issues, in alignment with the flexible training courses that have been evaluated in the previous section, some companies have accommodated to the needs of mature workers with flexible leave options.

“We actually have something called flexi-leave...So the flexi-leave right is to actually help them, you know settle their or run their own personal errands. Or you know, to just take time off to focus on themselves. So that is something that we already have in place for the matured workers.”

“We also come up with few policy level changes for our mature workers to be able to put some focus back on their families as well...you just want to take a break because your son or daughter or somebody in the family needs help. They’re going through a critical phase of their education, or you need to be at home for them for some time then creating some newer, new age, leave policies for them, that also we have seen, has helped.”

Mature workers are given a fair compensation for their extra contribution towards the organisation, as they tend to invest more into the company vis-a-vis their younger colleagues. Some companies have extended leave entitlement benefits to accommodate to mature workers.

“There’s also this whole thing on work-life balance where our HR and this mature workforce, we try to come up with this fancy work scheduling like give more leaves and caregiving support services you know, because they themselves might need caregiving support in that sense you know how do I put it like when you’re of a certain age, childcare leave makes sense but when you’re in your 60s, you don’t need child care leave right. Yea ok, so HR will do is, ok that childcare leave that we give is also applicable for you to you know for your grandchildren for example, you can use it for your grandchildren for example. You can also use it for your...like caregiving if you have to look after your spouse or whatever not, you can use that leave right, so there’s that kind of flexibility.”

“The mature workers tend to you know, give their personal time towards the organisation actually which is very much respected, because we also want them to have a good work-life balance...we would give them like a time off or something or just take a half day or a full day the next day...Because they have actually done so much for you whole night, it is not correct for them to come to office the next day. So we understand that it’s a bit of a give and take.”

**Supporting Mental Wellness.** To retain mature workers in the organisation, apart from providing healthcare support, most employers have set up programmes or platforms offering emotional support to look after their employees’ mental health. Some participants also posited that mature workers generally want to feel heard and listened to.

“And then, in terms of the health and wellness initiatives the one I mentioned, there’s a lot of what is it called, efforts to do talks on preventive care, stress management reports and also access to wellness resources, and counselling and whatever not so that is something that is also provided to the mature workforce in my company.”

The quantitative data analysis from the survey, as seen in Figure 33, supports our findings; flexible workplace arrangements (48%) and health and wellness support (42%) were the top two measures implemented by organisations to support mature workers. In addition, 41% of the respondents indicated that their organisations promote internal job mobility.

### Initiatives to Engage and Develop Mature Workers

**Implementing Engagement Surveys/Feedback Sessions.** Most organisations create the opportunity for employees to provide feedback or voice out their concerns through formal anonymous company surveys. Most of these feedback or engagement surveys are conducted monthly.

“We have engagement surveys. We involve them in the feedback from engagement surveys to see how effectively they engage with the company, what changes they want to see. They keep giving us feedback. We work on that.”

“We have a monthly survey. Sorry, yearly engagement survey. So that’s where actually we get to send the employees question like a pulse survey kind of a thing for us to understand how are they feeling, is there anything we are doing well, what are the concerns that they have and work towards addressing those concerns.”

Some companies propose a more informal approach to create a more relaxed and receptive atmosphere, such as collecting feedback during team lunches. Supervisors or managers will create opportunities in a relaxed environment for members of their team to establish a better rapport with each other.

“I will bring them out for dessert. And during the dessert, I asked them, ‘*What can I improve in my organisation? What do you see that I don’t have? What do you see that in your past experience, you can be better?*’, you know.”

“I purposely bring them out for coffee just downstairs the building. Cause sometimes you talk in the office environment, they become like monotonous. So, I try to break the thing and do it differently.”

**Creating Opportunities to Engage in Mentorship Roles.** Another avenue for engagement in organisations revolves around delegating mentorship roles for mature employees to be involved in the educating and upskilling of younger colleagues. This presents the mature workforce with the room to be more participative in organisational processes as well as create an educational channel for knowledge sharing.

“the entire age group of 40 plus is my mentor pool today... all of those leaders to see how you can engage with your next in line with- with the concept of purpose, making them realise where are you going with respect to your goal, how is this organisation progressing from where we are today, to where we want to go...So we have involved them in the process as mentors.”

“We have a mentoring programme and a buddy programme. Both of these programmes generally see an opportunity for mature workers to transfer their knowledge to the less experienced colleagues in the team.”

**Offering Training Opportunities.** Providing opportunities for employees to receive professional development and knowledge enhancement, is a tactical measure to engage employees and ensure that they are able to keep up with the changing nature of jobs.

“I think another strategy is, we talk about upskilling, right? That’s also another strategy how we keep that motivated on the job or to retain them...Right, give them all these learning opportunities. So, in our company we actually subscribe to the UdeMy platform. Right whereby the mature workers they can actually go and learn training at their own convenience.”

“Even if a department let’s say for example, medical records office right, it’s getting more and more redundant because all the records are digitalised. Yeah so those people handling the hardcopy ones, there will be deliberate in planning to get them to be trained and moved elsewhere. So, it has never, there is never retrenchment in the hospital.”

One HR leader indicated that their company has a sabbatical programme where mature workers or those vying for a mid-career switch, are allowed to take leave for training and re-join the company once they return from their sabbatical. This way, they continue to not only retain their talents but also upskill them rather than losing them to retrenchment.

“for our mid-career that we have done is a sabbatical that we have with reputed universities across the globe. If you have spent at least 2 years with the organisation, then you’re eligible for a sabbatical to go off and learn for up to 2 years, with the condition that you will come back and join us, and in many cases, if it is through a university that we are partnering with, we are also taking the cost of the course...I’ve also seen that the sabbatical has helped few of our leaders in mid-careers, because the career shift can happen only when there is continual learning, right? You are in a sales domain today, you want to switch career completely to HR, but you don’t have a former education. You want to take a sabbatical for one year, go to SMU and do a course and come back. We appreciate that, and that is now part of the policy. So, these are all avenues that we are trying to create for our mature workers.”

It is noteworthy to highlight that some employers believe in the mature workers' capacity to learn and accommodate to the changes in the workplace, if they were given more time to adapt. This is encouraging as it suggests that the employment prospect of mature workers may not be directly impacted by negative stereotype that they are technologically less capable than others.

“So I would say that these are the software or the tool is integral to the work nature...yeah with some guidance and some getting used to, I think even for mature workers right, they can still perform from on the job well.”

“Technically all the technical part, they can be trained. They can, they take a longer learning curve, but they will be there eventually.”

“Because management can see, can feel like, *‘oh this one I feel like not pick up so fast?’* So maybe I think this one irritates the management easily. Which is actually if you give more time...then can actually.”

It is also significant to point out that some companies have taken into account the multiple commitments that mature workers might have due to their unique stage in life. In a broad sense, many of these mature workers are part of the “sandwich generation” where they are often supporting both their parents and their children. To accommodate to this special need, some companies have provided flexible training schedules, so that employees do not need to compromise on their existing commitments while still being able to keep up with their peers in terms of skills upgrading.

“So, it is a very structured learning programme that is given to them...That could involve classroom trainings. It could involve visiting an institute. It could also involve learning anytime anywhere, where you are. But it's going to be a combination of all of this. Of course, designed in such a way that it does not impact their day to day working and their day-to-day living.”

“A lot of the digital skills, the way they are rolled out, we have offices where people can go attend trainings based on their convenience.”

Some HR leaders propose that there is an additional step that should be taken by companies after sending their employees to training or learning courses. They believe that a mock practice or avenue to practise the newly acquired skills would solidify their takeaway from the training session and further enhance their capabilities.

“All the learnings are tied to something called a proof of concept for these mature workers, because if you just learn, and you don't practice, then you may not be able to do well. You need a practice ground for it. So organisations have to come forward and create such mock practice opportunity for them”

“You learn from the theory, and you do your practical, you will be a perfect match, you know. I said, those people who only learned the theory ah, but not on the ground, cannot work one.”

As seen in Figure 32, implementing training plans for mature workers was perceived to be the most effective in extending the career runway of mature workers (25%) as compared to implementing flexible workplace arrangements (17%) and health and wellness support (14%).



Figure 32: Measures that Aid in Extending the Career Runway of Mature Workers

### Initiative to Support Retirement of Mature Workers

**Offering Part-Time Employment Options.** Some companies provide part-time employment positions for workers reaching retirement age. Mature workers often transition into retirement by reducing their work hours and continuing employment. Companies often offer this option so that they may remain actively employed and maximise their contribution to the organisation, while preparing for their retirement. 45% of the respondents indicated that their organisation preferred mature workers when considering offering part-time positions (Figure 31).

“We also have an out-placement option. Let’s say somebody wants to take an early retirement from our organisation but wants to continue in the industry at reduce capacity, *‘I don’t want to work 8 hours a day, but I want to do 4 hours a day.’* Then our out-placement agencies, basically partnering with many placement agencies in the region, we try and connect them with them to see if they can explore opportunities in organisations where there is an option for them to do part-time working.”

“For example, you know like phased retirement options, right like you know firstly is they ask you to go from full-time to part-time and to explore

alternative roles within the organisation right, I think that is something that I think in my organisation they do practice that.”

**Offering Re-Employment Options.** Other HR leaders shared that they offer re-employment for their mature workers in a consultancy or advisory role to utilise the expertise that they have accumulated over the course of their career.

“There are also many, so you know doctors, you know they become senior consultant and they, they could take on management positions and after they retire, they may be tapped on as emeritus consultant or even senior advisors. Yeah so they are still around advising.”

“So, people who are about to retire and still want to explore a career opportunity, post-retirement, we at that stage we mostly look at them as experts, industry experts, if they are in that kind of a role, right? So, there is an option to engage with some of them as retainers on a consultation assignment post that. So, we sort of try and create those opportunities.”

**Extension of Health Insurance Benefits in Re-Employment Contracts.** Health security and support remains important and especially so for mature workers reaching retirement age. Some companies have continued to assist their mature workforce with healthcare support and aid.

“I did for all those mature worker right, I said, *‘Instead of increasing just say for example, \$100 or \$200, why don’t these \$100 right, I give you in terms of insurance protection, so that you can draw out money when you reach 65? And then you have from now 55 to the 65, you have protection. Anything were to happen to you, you can be paid, your family can be paid.’*”

“We understand the need for the health insurance coverage, etc., right? In some cases, we have also extended benefits to them to say, *‘if you would like this to be covered for the next one year after your retirement, we will have your health benefits continued. And from there on you can also contribute to it at a subsidised cost.’*”

A participant mentioned that their employees who are transitioning to retirement continue to receive equal benefits as management recognises the contributions these mature employees have made to the organisation throughout their long tenure.

“I think one of the strategies that we adopt is the no differential strategy in terms of the benefits that we give them. So, most companies when the workers hit the retirement age, they might review their benefits, their salary, their annual leave entitlements and what not. So for us we value their experience and knowledge so even when they turn 60 retirement age, we have this clause that says that they will maintain whatever benefit that they

were drawing previously and it will not reduce just because they have reached retirement because we recognise the contribution and knowledge that they bring to the company and we do not see a reason why we need to reduce their benefit just because they have hit a certain age you know.”

From the quantitative survey, 42% of the employers have implemented health and wellness support in the organisation (Figure 33).

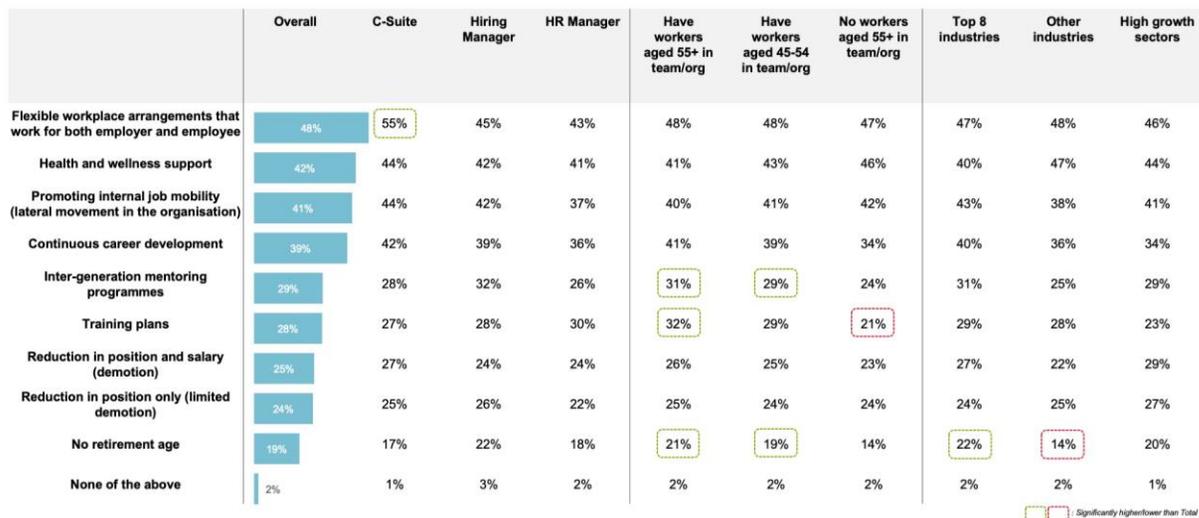


Figure 33: Measures Currently Practised in Organisation

In summary, it is paramount that organisations put in place more tailored strategies or policies that will serve the needs of their mature workforce. We have highlighted various practices, including flexible work arrangements, health benefits, training practices and the vital need for organisations to foster a supportive climate for age diversity in the workplace. There is certainly an emphasis on flexibility and health benefits that most mature employees value when considering employment and remaining employed. The self-governance over the control of one’s schedule is especially critical for helping mature workers manage their work and personal commitments. We understand that while dimensions of workplace satisfaction are considered by employers, whether these practices are specifically catered to sustain the mature workforce depends very much on the interests of both employers and upper management authorities. Additionally, while there are various government initiatives, more can be done to facilitate grant applications and perhaps to examine how the government can better support SMEs.

## Chapter 7: Interviews with Union Leaders

As part of the research study, the research team spoke with three union leaders across sectors who shared their perspectives on the ageing workforce and the challenges faced by mature workers in their unions. In the one-to-one interviews, we asked questions related to the following broad areas:

- Observations of the impact of the ageing workforce on organisations
- Challenges faced by mature workers
- Initiatives by the unions to support mature workers

### Impact of the Ageing Workforce

Two of the three unions leaders interviewed were from industries that rely heavily on employees' technical knowledge and skills. Their industries are also made up of many mature workers. Due to the laborious nature of the job and shift working hours, the union leaders shared that companies in their industry face manpower challenges, specifically, difficulties in attracting young employees while at that same time, it became difficult for mature workers to keep up with the physical demands of the job. Companies in this industry also face tough competition when recruiting and retaining young employees. One union leader highlighted that while he has observed that more mature workers have worked longer in their re-employment contracts, he has also observed that younger mature workers (between age 50 to 60 years) have left the industry due to increased workload.

One of the union leaders also highlighted that companies may face increased business costs as wages increase. Such a situation may influence the organisation's decision to retain mature workers. Organisations would also need to consider how they can redesign the jobs to reduce the demands of long-shift hours. In addition, one of the union leaders also suggested that organisations consider how they could better leverage the knowledge and experiences of mature workers by reskilling and training them. This approach will help to address workforce shortages, instead of depending on the recruitment of foreign labour.

### Challenges Faced by Mature Workers

In terms of the challenges faced by mature workers, the union's perspective is aligned with ground sentiments presented and discussed in Section 5.1. The union leaders have noted several challenges experienced by mature workers, which include: the relevance of their skills, keeping up with technology, fear of being displaced by younger workers, and the physical demands of the job.

## Initiatives by the Unions to Support Mature Workers

The union leaders we interviewed were cognisant of the ageing workforce situation and have taken proactive steps to engage mature workers through different engagement opportunities. For instance, the unions will partner with the organisations' HR to brief mature workers on re-employment contracts as well as to understand from the mature workers' perspectives, the types of support they need from the union. Generally, the unions have championed fair remuneration for re-employment contracts. With the aim to better prepare mature workers, one of the unions has also organised financial literacy and health awareness talks.

One union leader also shared how they had partnered with their HR to facilitate career coaching for mature workers. The purpose of career coaching is to help shift the mindset of mature workers so that they would consider the possibility of multiple careers throughout their lives and be open to opportunities such as gig work.

The unions also support lifelong learning by providing financial assistance to their union members. For instance, to reduce the workload of mature workers, one of the unions has tapped into various government grants to customise training courses on automation and digitalisation for mature workers.

In the context of change management, unions play a mediating role in terms of buffering the tension between mature workers and organisations. The unions play a role in encouraging mature workers to embrace open-mindedness and adapt to changes, while also advocating with organisations to allocate additional time for mature workers to make necessary adjustments.



## Chapter 8: Policy Recommendations for the Labour Movement

Based on this research study, the labour force will experience more changes in the years to come. It will have an impact not only on the way businesses are run but also how the existing manpower will be managed. We can infer from the observations made in this research that the labour pool will shrink and at some point, businesses will have to start recruiting from less traditional sources—mature workers and women with caregiving duties. They could either be in the workforce or be encouraged to return to the workforce.

Another possible scenario is for many industries to consider automation or expanding on their existing automation strategy to overcome the expected manpower shortfall. In either scenario, the Labour Movement (LM) continues to have a salient role to play both as an advocate and facilitator to enhance workers' employability. Its best course of action is to continue to rely on its existing policies and initiatives as well as to strategically aid pertinent new initiative along the way.

A current review of NTUC's programmes and initiatives shows that the strong focus that it has already placed on enhancing the employability of workers given the changing demands of Singapore's evolving employment landscape. An example of one such initiative i.e., championing workplace flexibility. Another area is to improve the employability of mature workers through skills upgrading programmes and funding. Preliminary recommendations can be found in Table 5, and for these existing programmes to be successful is (1) the information needs to reach its target audience and (2) for employers, employees, and would-be employees to see the value in taking part in these initiatives.

As a follow-up to the insights gained from this study, the research team at NTUC will embark on phase 2 of the study to delve deeper into:

- a. The needs, motivations, and aspirations of mature workers and women with caregiving needs across different age ranges.
- b. Analysing the effectiveness of existing interventions and support targeted at mature workers and women with caregiving needs to facilitate finding and maintaining employment.
- c. Identifying potential gaps that need addressing due to the retiring workforce leavers by 2030, especially in the top three industries (i.e. Cleaning & landscaping, Land transport & supporting services, and Food & Beverage Services) that have the highest incidence of workers aged 55 and over.

NTUC's Current Strategies/Programmes	Recommendations
<p><b>1. Skills Upgrading</b></p> <p>NTUC Education and Training Fund (NETF)</p> <p>Union Training Assistance Programme (UTAP)</p> <ul style="list-style-type: none"> <li>• Subsidy scheme for training programmes</li> <li>• Increased funding support for NTUC members aged 40 and above.</li> </ul> <p>(NTUC, 2023a)</p>	<p><b>Enhance Outreach Initiatives</b></p> <ul style="list-style-type: none"> <li>• Expand outreach initiatives to the community i.e., employers and employees.</li> <li>• Enhance outreach programme to the target audience i.e., NTUC members but also include non-NTUC members.</li> </ul> <p><b>Sufficient/Comprehensive Content in Training Programmes</b></p> <ul style="list-style-type: none"> <li>• FGD research participants have indicated that there is a skills gap between what they have been taught in upskilling programmes to the level of expertise that potential employers are seeking.</li> <li>• Review curriculum provided in training programmes to minimise the gap between what is offered in upskilling/training programmes and expectations from employers.</li> <li>• Ensure training providers and employers have an agreement on the level of expertise required for certain roles.</li> <li>• Conduct regular reviews to stay updated on changing expectations and demands.</li> </ul>
<p><b>2. Job Redesign</b></p> <p>Company Training Committees (CTCs)</p> <ul style="list-style-type: none"> <li>• Helps companies identify competency requirements and jobs at risk of redundancy in a changing work landscape.</li> <li>• Support workers in enhancing their skills and closing development gap to match industry transformation.</li> </ul> <p>(NTUC, 2023c)</p>	
<p><b>3. Championing Workplace Flexibility</b></p> <ul style="list-style-type: none"> <li>• The Tripartite Workgroup (TWG), including NTUC have begun introducing Tripartite guidelines in implementing Flexible Work Arrangements to better cater to employees so that employers may increase retention of mature workers and allow for easier return of those with caregiving duties to the workplace.</li> </ul> <p>(Rashid, 2023)</p>	<p><b>Job Sharing</b></p> <ul style="list-style-type: none"> <li>• Increase publicity of job-sharing initiative.</li> <li>• Introduce job sharing as part of existing programme NTUC Job Security Council (JSC).</li> <li>• JSC “is an ecosystem with a network of receiving (companies looking to hire) and releasing (companies that may have to let go of workers) companies.” (NTUC, 2023b)</li> <li>• JSC helps to match workers to new roles ahead of displacement from current organisation.</li> <li>• Instead of releasing workers from organisation, NTUC can propose job sharing to companies who are considering letting go of workers.</li> </ul>

<p><b>4. Work-life Balance for Women with Caregiving Duties</b></p> <ul style="list-style-type: none"> <li>• “Better Workplace Campaign” that advocates for i) Work-Life harmony practices, ii) Flexible work arrangements and iii) Managing Workplace Harassment</li> </ul> <p>(Yeo, 2023)</p> <ul style="list-style-type: none"> <li>• NTUC U Family “Shared Parenting Programme” aims to encourage working fathers to partake in caregiving duties.</li> </ul> <p>(NTUC, 2023b)</p>	<ul style="list-style-type: none"> <li>• Could possibly increase uptake of job-sharing in organisations.</li> </ul>
<p><b>5. Assisting specific groups to re-enter the workforce after retrenchment or long layoff due to personal reasons e.g., caregiving duties or taking care of young children.</b></p>	<p><b>Introduce Job Clubs for Networking Opportunities</b></p> <ul style="list-style-type: none"> <li>• FGD participants offered feedback that their employment opportunities usually present themselves in the form of job recommendations from professional networks rather than hired through job advertisements.</li> <li>• Job Clubs “offer small group support and networking assistance” (Wandner et al, 2018).</li> <li>• Job clubs typically comprise of a small group of job seekers, led by a “Job Club leader” who meet up regularly to discuss their job searching experiences and share professional contacts.</li> <li>• Avenue for job seekers to learn from one another while receiving peer support. The main benefit of a job club is the opportunity to network while navigating the job market (Urban Institute, 2022).</li> <li>• Job clubs are typically held in community spaces (Urban Institute, 2022), they may be more accessible and appealing than applying for jobs online especially for mature workers who may not be digitally savvy.</li> <li>• Consider conducting job club meetings at local community clubs.</li> </ul>

<p><b>6. Intergenerational Collaboration</b></p> <p>Provide greater accessibility to career mentorship</p> <ul style="list-style-type: none"> <li>• To support career mentorship, NTUC will be boosting the number of career mentors to 1,200 by 2025.</li> <li>• Career mentors will be sourced from a variety of sectors.</li> <li>• Establishing ‘mentorSHIP’, “a mentoring hub for youths, which will focus on industry mentorships and other related career support services.”</li> </ul> <p>(Rosario, 2023)</p>	<p><b>Awareness Campaigns and Outreach Programmes</b></p> <ul style="list-style-type: none"> <li>• In addition to existing initiative ‘mentorSHIP’, to consider launching awareness campaigns and outreach programs aimed at changing perceptions and stereotypes about mature workers.</li> <li>• Educate both employers and the public about the value and capabilities of older employees.</li> <li>• Organise workshops and seminars that highlight the benefits of intergenerational workplaces.</li> </ul>
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Table 5: Policy Recommendations



## Chapter 9: Conclusion

In making and presenting the labour force projections, it can be observed that for the short-term the labour market will recover as COVID-19 becomes endemic and the economy restarts. However, there will be headwinds encountered by the manufacturing and construction industry regarding employment growth and in the long-term there is an expectation that job vacancies are expected to decline and will lead to job seekers spending long periods seeking employment. Given this scenario, we expect that sectors that are experiencing a labour crunch in the short-term will likely turn to alternatives for example, automation. For industries where their work processes allow, they might even consider encouraging mature workers and women with caregiving duties to re-enter the labour force as alternative sources for labour.

The focus group discussions organised for this project sought to better understand these two specific groups within the population—mature workers and women with caregiving duties’ perspectives placing focus on the challenges faced by both groups either staying in employment or seeking employment. Despite the unique challenges faced by both groups, there were similarities in the facilitators and desired support to assist them in employment, mainly the need for a more inclusive workplace culture. Promoting inclusivity spanned options like pro-family and age-friendly HR practices; to having open conversations with employees; to seeing how organisations can also serve their interests while fulfilling business outcomes. This is crucial given an ageing workforce coupled with low birth rates, the phenomenon of a “sandwiched generation” will also become more prominent.

The cross-country comparison that included Singapore showed that governments are not sitting idle while their countries grapple with the future of slowing workforce growth and an ageing workforce. In fact, the strategies currently available in Singapore are comparable to those of established economies like Japan and the Netherlands. The areas covered include protecting workers at the workplace and flexible work provisions, to name a few of these initiatives. This was further corroborated by our interviews with local HR leaders that showed what was happening on the ground. Perhaps what has been seemingly lacking is policy/programme outreach that is neither well developed nor wide enough for both Singapore and Japan unlike the Netherlands.

In responding to the research questions posed by this study, it has attempted to meet the three objectives that are salient to the Labour Movement in the years ahead. The objectives are reintroduced here, (1) identify key manpower strategies to mitigate impact of slowing workforce growth in Singapore and evaluate the efficacy of these measures; (2) develop a targeted sectoral and national support in navigating slowing workforce growth; and (3) help shape NTUC’s positions and strategies in workforce related policies (i.e., retirement age, foreign manpower policy etc). To a certain extent, the first and second objectives have been addressed through the observations and suggestions proposed by this study. It is also pertinent to note that the Labour Movement (LM) does not function in a vacuum and there are already existing strategies that it can champion or

enhance to address slowing workforce growth in Singapore, for example in the areas of training and skill enhancement to improve each worker's employability by continuing to champion existing initiatives like Company Training Committees (CTC) or collaborating with training providers to revamp existing training curriculum to bridge the skills gap experienced by trainees. For the third objective, NTUC can take a more prominent position to champion workforce policies for specific groups like women with caregiving needs and mature workers who are outside the labour force but wish to return.

By taking the necessary pre-emptive measures and making changes to align and meet the challenges posed by population ageing and slowing labour force growth, the Labour Movement can support employees and employers to achieve better business outcomes that will benefit all parties, and thereby producing a vibrant economic outlook despite the impending challenges.



## Appendices

### Appendix A: Systematic Review of Labour Policies Across Countries

Strategies (Themes)	Strategies	Challenges (Themes)	Challenges of an ageing workforce	Countries with similar challenges
Career guidance programmes / Job training	"Wagner-Peyser Act Employment Service (ES). JSA consists of a package of job search tools and training. JSA is either delivered in workshops lasting from 2 hr to 3 days, or in job clubs that offer small group support and networking assistance (Balducci, Johnson, & Gritz, 1997, pp. 464-465). Field experiments found that JSA provided to unemployed workers at risk of long-term unemployment significantly reduced the duration of their unemployment and was cost-effective" (Wandner et al., 2018)	Long unemployment duration	"Older workers have suffered longer periods of unemployment when out of work compared with younger workers" (Wandner et al., 2018)	America, Poland, Germany, (generally across Europe), Korea
	"The Senior Community Service Employment Programme (SCSEP) is funded and operates under the Older American Act (OAA) but is run by the US Department of Labor (DOL). OAA in 2016 re-authorised among other programmes the SCSEP for three years (FYs 2017-2019). It offers part-time community service employment opportunities for low-income unemployed individuals aged 55 or over at non-profits or government agencies, with a view to prepare them to enter or re-enter the workforce." (OECD, 2018c)		America, Poland, Germany, (generally across Europe), Korea	
	"Adult and Dislocated Worker programmes.....Core services included basic job search and placement activities and were available to the general public without any eligibility requirements. Intensive assistance was available to customers who face employment barriers and they may subsequently receive more intensive job search assistance. Finally, training services were available to enable workers to retain new positions or become qualified for higher-skill, better-paid positions." (OECD, 2018c)		America, Poland, Germany, (generally across Europe), Korea	
	"Trade Adjustment Assistance (TAA) for Workers programme. The TAA Program's mission is to transition workers who have lost or may lose their jobs as a result of foreign trade, to in-demand careers. The TAA Program's benefits and services include up to two years paid training, employment and case management services, job search allowances, relocation allowances, wage supplements for reemployed workers age 50 and older, and a health coverage tax credit." (OECD, 2018c)		America, Poland, Germany, (generally across Europe), Korea	
	"the Heldrich Center created the privately funded New Start Career Network (NSCN), which assists New Jersey's older (ages 45 and older) long-term unemployed and underemployed job seekers. NSCN provides free services, including virtual tools and webinars, members-only job fairs, and		"A Heldrich Center analysis of long-term unemployment found that older workers were significantly overrepresented among New Jersey's long-term unemployed population"	America, Poland, Germany, (generally across Europe), Korea

	individual and group coaching from 300 trained volunteers." (Van Horn & Heidkamp, 2019)		(Van Horn & Heidkamp, 2019)	
	"Perspektive 50plus' was introduced in 2005 and was designed to enable the new Jobcentres to tackle the employment barriers of long-term unemployed more effectively. The program typically consists of the assessment of the jobseekers' skills, counselling, job search assistance and coaching, training as well as interventions to improve health and mobility....The programme was delivered through local 'employment pacts' which brought together Jobcentres, employer organisations and other partners to provide individualised support for the unemployed. The pacts also raised awareness of, and promoted the recruitment of older workers amongst employers." (Vodopivec et al., 2019)		Long unemployment duration	Germany, Korea, America, Poland, Europe
	"The Public Employment Service (PES) provides a range of outplacement services and training opportunities to older workers. It mainly focuses on facilitating the matching between jobseekers and job vacancies" (OECD, 2018b)			Korea, America, Poland, Germany, Europe
	"Internship Programme of the Middle and Older-aged, introduced in 2013, which provides internship opportunities for unemployed people aged 50 and over to connect to regular jobs." (OECD, 2018b)		Long unemployment duration	Korea, America, Poland, Germany, Europe
	"Job Hope Centres for middle-aged and elderly people provide a wide range of re-employment services tailored to individual needs. Going beyond the matching function, counselling and guidance services are provided to older workers who need (re)training before starting their job search, and often lack the basic ICT skills needed to use online services." (OECD, 2018b)			Korea, America, Poland, Germany, Europe
	The Korean Senior Employment Program (KSEP), established in 2004, is another example of a government's effort to provide part-time work opportunities for older people. (Choi, 2016).		"This is an age group that may experience long-term unemployment once they lose their jobs and from which employers are reluctant to hire" (Choi, 2016)	Korea, America, Poland, Germany, Europe
	"The <i>Social Integration Club</i> (KIS) ensures training opportunities exist for unemployed/inactive older workers.", "The work with a participant begins with focusing on developing their 'soft abilities' (communication, sense of responsibility, work time co-ordination, and hygiene diligence). Only after improvements in these soft abilities, can they update, improve or obtain vocational abilities and qualifications. During vocational skills training, a person has the chance to work in what are termed 'socially useful jobs', and if a participant proves themselves there, they can move on to regular work." (Martinez-Fernandez, 2013)		"If they are unemployed, it is rather difficult for older workers to find new employment." (Martinez-Fernandez, 2013)	Poland, America, Germany, Europe, Korea
	"I work – I develop competency; an innovative model of support for workers 50+" project. The main objective of the project was to increase the activity and the attractiveness of employment of workers in the age group 50 +			Poland, America, Germany, Europe, Korea

	<p>in the labour market ..... (Including use of career counselling and assessing levels of competence, participation in training and courses, the use of specialised prevention of health-related consulting and legal services relating to the functioning of the labour market)." (Martinez-Fernandez, 2013)</p>			
	<p>"PES staff has been trained to better serve needs of older workers, and an e-learning programme has been developed to support staff members in their work. This training programme promotes use of job placement, career guidance and individual action plans as methods to help older people back to work" (OECD, 2015)</p>		<p>Long unemployment duration</p>	<p>Poland, America, Germany, Europe, Korea</p>
	<p>"Employment Success Package Programme (ESPP). ESPP is a comprehensive intervention which can last up to one year and is tailored to individual needs" , "it combines: 1) intensive counselling, including psychological testing, group counselling and the establishment of an individual action plan; 2) targeted training in line with individual needs, including vocational training and business start-up training; 3) job placement support, including the provision of job-search skills; and 4) financial incentives for jobseekers to participate in the programme and in training and to stay in employment afterwards." (OECD, 2018b)</p>	<p>Lack of training opportunities</p>	<p>Lack of training opportunities</p>	<p>Korea</p>
	<p>"Entitlement of employees age 50+ to be paid training leave." (Martinez-Fernandez, 2013)</p>		<p>"Increasing pressure related to workplace competition from: people who are younger and better educated; the wider usage of new technologies; new cultures of work; and new norms of behaviours – all create unfavourable conditions for older workers, especially in the absence of age management in enterprises." (Martinez-Fernandez, 2013)</p>	<p>Poland</p>
	<p>"Working persons aged 45+ are entitled to financial support for training, exams, postgraduate study, and scholarship loans, provided by local labour offices (financed by the Labour Fund)" (Martinez-Fernandez, 2013)</p>	<p>Workplace competition from younger workers</p>		<p>Poland</p>
	<p>"Hello Work (Japan's Public Employment Service) provides special counselling and guidance and job placement services for older job seekers aged 55 and above and for those aged 65 and above." (OECD, 2018a)</p>			<p>Japan, Australia, Netherlands, Europe, America, Taiwan</p>
	<p>"Tokyo Metropolitan Vocational Skills Development Center, provides as a public entity public vocational training for jobseekers and employees, with a specific focus on those who work in SMEs....specific courses were earmarked for older jobseekers aged 50 and above. These can be trained for three to six months in 13 areas, such as building management, livelihood support services, cleaning staff training, garden construction management, equipment maintenance, electrical facility maintenance, hotel and restaurant service" (OECD, 2018a)</p>	<p>Low hiring / retention of mature workers</p>	<p>Low hiring / retention of mature workers</p>	<p>Japan, Australia, Netherlands, Europe, America, Taiwan</p>

	"Some municipalities provide job creation programmes, guidance, or training programmes for older worker and may run their own employment programmes. They can apply for a three year grant in order to tackle local labour market problems, such as labour shortages and promotion of employment of older worker." (OECD, 2018a)			Japan, Australia, Netherlands, Europe, America, Taiwan		
	"Talent 55+" programme designed to cater to those aged 55 and above. 55+ job search networks (job clubs) supported by 120 specially trained job counsellors. Address deficits in job search behaviour, motivate them and build self-confidence" (European Commission, 2019)			Netherlands, America, Europe. Japan, Australia, Taiwan		
	"expos to link older job seekers with potential employers (Illawarra Retirement Trust, 2018), job boards specifically for older workers" (Caines et al., 2020)			Australia, Netherlands, America, Europe. Japan, Taiwan		
	"The Thai Ministry of Labor (MoL) recently launched the country's first Employment Service Center for Elderly Workers (ESCEW) to help match up employers' needs with older people for whom their work preference were registered in person or online." (Kiattikunwong, 2018)	Job mismatch	"Older people may not be suitable for the job" (Kiattikunwong, 2018)	Thailand		
	"For older workers aged 55+, training offers in PES are as a rule relatively short or they consist of on- the-job training where a 'job-ready' unemployed older worker refreshes their skills and learns new 'firm-specific' ones through experience, for example, in subsidised trial placements or in subsidised employment." (European Commission, 2019)			Europe, Netherlands, Taiwan, Australia		
	"Individual Learning Accounts (ILAs) are targeted directly towards individuals and aim to give them more autonomy in their upskilling decisions....eligible individuals open a bank account, generally at a government entity created specifically for such purposes, with the goal of saving financial assets for the purpose of training. To stimulate their savings, the government provides incentives in the form of tax deductions, subsidized interest rates, or direct financial top-ups. The government generates a list of authorized providers of training or education, sometimes limiting the fields of study or training based on perceived labour market needs." (Vodopivec et al., 2019)			Lacking skills / Outdated qualifications	Lacking qualifications and certificates	Netherlands, Europe. Taiwan, Australia
	"To upgrade unemployed older workers' skills and enhance their reemployment opportunities, the government has worked with private training institutions and provided many free vocational training programs for older workers. The government offers a subsidy to employers for training employees and provides an allowance to those who receive vocational training. In addition to providing vocational training to unemployed older workers, the government also works with private training			Lacking relevant job skills		Taiwan, Netherlands, Europe, Australia

	agencies and offers on-the-job training to older workers to maintain and improve their job skills in order to meet new challenges at the workplace." (Lin & Chen, 2015)			
	"the government offers diverse job training programs. The unemployed can join job training programs without paying any fees. In addition, during the training period, unemployed older workers are able to receive a training allowance for up to 6 months" (Lin & Chen, 2015)			Taiwan, Netherlands, Europe, Australia
	"the government is funding a Collaborative Partnership on Mature Age Employment, subsidising access to training for older workers" (Caines et al., 2020)			Australia, Taiwan, Netherlands, Europe
Employment / Tax subsidies	"Temporary wage subsidies for employers are the most common type of age-specific programmes for older, and for other 'difficult-to-place' workers. The rationale of wage subsidies is to compensate employers for the perceived lower productivity and risks of hiring older workers by reducing their wage costs .... they provide employers a period to screen workers and workers a chance to resume work, which can be highly valuable for the long-term unemployed." (European Commission, 2019)	Low hiring / retention of mature workers	"The OECD data appear to confirm the general results of national studies showing that the increase in the employment rates of older workers is largely a consequence of higher rates of retention rather than increased hiring rates." (European Commission, 2019)	Europe, Australia, Netherlands, America, Japan, Taiwan
	"'Labour Costs Compensation(LKV)' . An employer hiring an older worker (56+) on unemployment benefit receives a reduction in their employers' contribution to social security contributions of EUR 7 000 per year (less for part-time employment)" (European Commission, 2019)		Low hiring and retention rate of mature workers	Netherlands, America, Europe. Australia, Japan, Taiwan
	"To promote and retain employment of older people, the government has also provided subsidies to employers who i) hire workers who have retired because of the mandatory retirement age, ii) raise the retirement age above age 60, or iii) abolish the mandatory retirement age." (OECD, 2018b)	Long unemployment duration	Long unemployment duration	Korea, Taiwan, America, Poland, Europe, Japan
	"the government provides financial incentives to employers for hiring older workers. The subsidy can last for one year" (Lin & Chen, 2015)	Long unemployment duration	"it should be noted that middle-aged and older workers experience longer spells of unemployment" (Lin & Chen, 2015)	Taiwan, Korea, America, Poland, Europe, Japan
	"Reduction of costs for labour of older workers" (Martinez-Fernandez ,2013)	High cost of employment	"Wages for older workers are on average higher than wages for younger workers. Therefore, in times of economic difficulties, employers are more interested in employing and keeping younger employees." (Martinez-Fernandez, 2013)	Poland, Japan
	"Changes were introduced in the Labour Code, reducing the number of days of illness where the employers pay sickness benefits to workers over the age of 50 – from the former standard of 33 days to 14 days; the state pays them afterwards." (OECD, 2015)		High cost of employment	Poland, Japan

	<p>"The government has been providing employers with subsidy programmes as financial incentives for them to continue employing their older workers at least until age sixty-five (MHLW, 2010)." (Flynn et al., 2014)</p>		"concern about the affordability of retaining older workers" (Flynn et al., 2014)	Japan, Poland
	<p>"Japanese Ministry of Health, Labour and Welfare (MHLW) provides subsidies (<i>Jinzai Kakuhotou Shien Zyoseikin</i>) to help SMEs incorporate worker performance and ability into their wage and personnel systems. The subsidy was established in 2018 and is provided to encourage firms to establish a personnel evaluation system that is not based on regular and automatic pay raises but on workers' vocational ability." (OECD, 2018a)</p>		High cost of employment	Japan, Poland
	<p>"A Royal Decree, issued under the Revenue Code on Income Tax Exemption (No. 639), provides for the exemption of corporate income tax for corporations or juristic partnerships if they employ the elderly over 60 years or more." (Kiettikunwong, 2018)</p>	Age discrimination / Negative stereotypes	"attitudes/concerns from colleagues (especially bias from younger generations against older people)" (Kiettikunwong, 2018)	Thailand, Poland, Netherlands, Europe, America
Awareness Campaigns / Outreach programmes (Re-establish value of mature workers)	<p>"The Equal Employment Opportunity Commission (EEOC) offers Technical Assistance Programs (TAPS) to employers in cities across the country. TAPS are designed to help human resource staff, business owners, managers, union officials, and government officials gain an understanding of their legal obligations in preventing all forms of employment discrimination, including age discrimination" (OECD, 2018c)</p>	Age discrimination / Negative stereotypes	Age discrimination	America, Europe, Netherlands, Poland, Thailand, Australia
	<p>"Proactive outreach to employers and the public to combat discrimination and disseminate age management practices" (European Commission, 2019)</p>		"Age stereotypes and discrimination are generally regarded as a significant factor with negative effects on employers' willingness to retain or hire older workers." (European Commission, 2019)	Europe, America, Netherlands, Poland, Thailand, Australia
	<p>"An awareness-raising campaign launched by the PES in 2015 has tackled the issue of older worker stereotypes, for example, by featuring testimonials of successful people over 50." (European Commission, 2019)</p>			Europe, America, Netherlands, Poland, Thailand, Australia
	<p>"Dissemination of information to all PES stakeholders on anti-discrimination obligations based on age or disability (Ministry webpage)." (European Commission, 2019)</p>			Poland, Europe, America, Netherlands, Thailand, Australia
	<p>"Campaign--- "Life is passion", consisted of TV and radio spots, reportage and posters. Older people were shown in contexts of work, sport and recreation, health, leisure and culture; these sight and sound images expressed beauty, joy and vigour" (OECD, 2015)</p>			Age discrimination
	<p>"Open for 50-plus' public relations campaign since 2014 jointly with the MKB-Nederland (the Dutch Association of Small and Medium Enterprises). Employers are encouraged through radio and online commercials to invite 50+ aged workers to job interviews and firms are asked to report vacancies to the regional PES offices" (European Commission, 2019)</p>		Netherlands, America, Europe, Poland, Thailand, Australia	

	"In 2010, the Australian Government introduced a Productive Ageing Package to reduce barriers to employment for older workers. One component of the initiative included the creation of the Consultative Forum on Mature Age Participation, which concluded its work in 2012. The forum, made up of representatives from diverse social partners, shared best practices and recommendations for supporting older workers in the workforce through various publications, some of which specifically for employers." (OECD, 2018a)	Low hiring / retention of mature workers	Low hiring / retention of mature workers	Australia, Europe, Netherlands, America, Japan, Taiwan
Implementation of Anti-discrimination policies	"employers are liable to a hefty fine under the Middle-Aged and Elderly Employment Promotion Act that was effective in 202011 if they are found guilty of practicing age discrimination" (Goh et al., 2023)	Age discrimination / Negative stereotypes	Age discrimination	Taiwan, America, Europe, Netherlands, Poland, Thailand, Australia
	"Age Discrimination in Employment Act (ADEA) of 1967. The ADEA forbids discrimination against employees or job applicants who are 40 or older and who work for employers with 20 or more employees." (OECD, 2018c)			America, Europe, Netherlands, Poland, Thailand, Australia
	"Age Discrimination Act in 2004, which covers both direct and indirect discrimination in recruitment and selection, working conditions, training, promotion, transfer opportunities, and dismissals" (Zacher & Griffin, 2015)			Australia, Poland, Netherlands, Europe America, Thailand,
	Law for the Stabilization of Employment of Older Persons --- "LSEOP compelled employers to rehire all workers reaching age 60 who desire to continue working for the same employer" (Higo & Klassen, 2017)	Low hiring / retention of mature workers	Low hiring and retention of mature workers	Japan, Australia, Netherlands, Europe, America, Taiwan
Health protection and promotion	"The Unorganised Workers Social Security Act (UWSSA) that includes health insurance, life insurance and pension schemes, largely for the population below the poverty line and workers in the unorganised sector." (Laishram & Melody, 2021)	Health concerns	Health concerns	India, Thailand, Australia
	"National Rural Health Mission (NRHM) to provide accessible, affordable, and quality health services in rural areas with a special emphasis on elderly care" (Laishram & Melody, 2021)	Health concerns	Health concerns	India, Thailand, Australia
	"Informal workers utilise healthcare services provided by the Universal Health Coverage Scheme (UCS). It provides healthcare for people who have no employment benefits, such as agricultural and home-based workers." (S. Thanapop, & C. Thanapop, 2021)			Thailand, India, Australia
	"Prevention and health promotion activities for adult workers before they reach old age. Total worker health (TWH) concept, which is a platform for promoting disease and injury prevention efforts in the workplace by developing innovative methods, techniques and approaches for dealing with occupational safety and health problems" (S. Thanapop, & C. Thanapop, 2021)			"The increasing risk of NCDs among older workers may be due to a decline in physical capability and increased obesity. These factors have a negative impact on older workers' work

			ability." (S. Thanapop, & C. Thanapop, 2021)	
Reduce working hours	"Partial retirement schemes, in which the partial loss of income is compensated in part by a partial pension subsidy, permitting workers to switch from full time to subsidised part-time work (Eurofound, 2016). The reduction of working time enables them to work longer than would otherwise have been feasible." (European Commission, 2019)	Early exit from labour force	Early retirement	Netherlands, Germany, Poland, Japan
	"Work sharing, also known as Short-time Compensation or Shared Work, is an alternative to layoffs when employers have reduced needs for labor. Employers reduce the hours of work for a larger group of workers, rather than laying off a smaller number of workers. Employees receive partial wages for the hours they work and a proportion of their weekly unemployment benefits for the nonwork periods. Employers generally target the use of work sharing to retain skilled workers. These workers generally have long tenure, and many of these participating workers are older workers. Because work sharing avoids layoffs and offers the possibility of return to full-time employment, it is of particular value to long-tenured, older workers." (Wandner et al., 2018)		"Many workers who plan to continue working in career jobs at reduced hours as they get older find it impossible to do so, and end up fully retired" (Wandner et al., 2018)	America, Japan, Korea
	"The decline in Korea in average hours worked is a direct consequence of the recent reduction in statutory working hours. Since 2004, the legal work week in Korea is 40 hours (previously 44 hours and before 1990, 48 hours) plus up to 12 hours of overtime work. Like in previous instances, the 40-hour week in Korea was introduced gradually over time, according to enterprise size" To combat reduced income resulting from lower working hours, "the Korean government introduced a new allowance system for older workers over age 50 beginning in 2016, which compensates 50% of their income loss if they work 32 hours or less per week" (OECD, 2018b)	Long working hours	"Long working hours are widespread regardless of age, gender, company size, industry, and region, and older workers are no exception: usual weekly working hours for Koreans aged 55-64 years are among the longest in the OECD for men and the longest for women....they also choose to work longer to complement their low hourly wages." (OECD, 2018b)	Korea, America, Japan
	"Legislative reform package (Work Style Reform) seeks to reduce overtime." (OECD, 2018a)	Long working hours	Poor working conditions, long working hours	Japan, America, Korea
Gradual elimination of seniority wage systems (Shift towards skills/merit-based system)	"To encourage firms to hire workers beyond 65 or increase the mandatory retirement age beyond 65, contracted consultants at JEED (Japan Organisation for Employment of the Elderly, Persons with Disabilities and Job Seekers) provide firms with recommendations on a broad range of personnel management reform, such as evaluation schemes, wage design (away from a seniority-based system towards a job-related/competency-related wage system), workplace improvement, and training/health management." (OECD, 2018a)	Low hiring / retention of mature workers	Low hiring and retention of mature workers	Japan, Netherlands, Europe, America, Australia, Taiwan
	"The new National Competency Standards (NCS) and the progressive implementation of	High cost of employment	"According to the Additional Survey on	Korea, Japan

	<p>Qualification Frameworks based on the NCS constitute an important step in the right direction. For each industry, the NCS provide a classification of jobs into various categories, and for each category, they set out specific competencies – in terms of skills, knowledge and attitude – workers should possess to achieve their job duties successfully" (OECD, 2018b)</p>	(Seniority wage-based system)	Labour Force at Establishments, a seniority wage system was in place in 2017 in 60.3% of establishments with 100 or more employees. This is perhaps the single most important factor driving negative employment outcomes for older workers in Korea." (OECD, 2018b)	
	<p>"public authorities aim to foster the transition towards a job- and skills-based system by providing information, guidelines and other relevant services. In this respect, the Korea Labour Foundation provides briefing sessions, consulting services and free counselling to help companies engage in a dialogue with employees and/or their representatives. The government releases information on best practices, based on a selection of firms that have successfully reformed their practices through improvements to the wage-setting system." (OECD, 2018b)</p>		<p>"According to the Additional Survey on Labour Force at Establishments, a seniority wage system was in place in 2017 in 60.3% of establishments with 100 or more employees. This is perhaps the single most important factor driving negative employment outcomes for older workers in Korea." (OECD, 2018b)</p>	Korea, Japan
	<p>"Japanese companies are beginning to offer wage contracts to workers according to their duties while weakening the seniority elements. Larger companies are shifting away from the seniority system, and job-duty is given more weight in determining a firm's basic wage." (OECD, 2018a)</p>		High cost of employment due to seniority wage-based system	Japan, Korea
Retirement / Pension Reforms	<p>"Pension reform, including increasing retiring age, the withdrawal of the possibility of early retirement and the introduction of bridging retirement pensions to preserve the possibility of early retirement for persons working in special conditions." The reforms were to "motivate older employee to undertake a longer working life and thus increase the employment rate of the elderly" (Martinez-Fernandez, 2013)</p>	Early exit from labour force	<p>"Main reason for disengagement is the entitlement to the old-age pension, including pre-retirement pension schemes." (Martinez-Fernandez, 2013)</p>	Poland, Netherlands, Germany, America, Australia
	<p>"Pension and welfare systems were reformed to reduce the financial attractiveness of early retirement and to close off state-financed early retirement pathways" (Hofacker et al., 2016)</p>		Early retirement	Germany, Poland, Netherlands, Japan, Australia
	<p>"The retirement allowance is not linked to age but directly to the tenure to cultivate long-term organisational commitment. Employees who worked for a long time until retirement age can get a larger amount of retirement pay." (Sueki, 2016)</p>	Early exit from labour force	Early retirement	Japan, Netherlands, Poland, Germany, Australia
Financial support for self-employment	<p>"the government has also developed a series of free entrepreneurship courses and offers low-interest loans of up to 1 million new Taiwan dollars to each applicant". (Lin &amp; Chen, 2015)</p>	Low hiring / retention of mature workers	Low hiring / retention of mature workers	Taiwan, Japan, Australia, Netherlands, Europe, America
	<p>"Self-Employment Assistance (SEA). The SEA program alters the traditional UI approach by allowing UI-eligible unemployed workers to</p>	Lacking support for	"Since older workers often search for certain types of employment	America, Europe

	receive compensation while starting and establishing microenterprises—small businesses that usually consist only of a single owner-operator. SEA has been found to be particularly effective among older workers, who have higher rates of self-employment in the population, and higher rates of SEA business survival." (Wandner et al., 2018)	self-employment	(e.g., part-time work and self-employment), they need income support while they are searching for work, and they need substantial and often specialized forms of reemployment assistance" (Wandner et al., 2018)	(Self-employment)
Flexible work arrangement	"The legal right to request flexible work arrangements has been extended to specifically include older workers (aged 55+ years)...The provision of flexible work arrangements is also one of a number of strategies for reducing work-life conflict and promoting employee wellbeing more generally" (Noone, et al., 2018)	Health concerns	Health concerns	Australia, India, Thailand

Table 6: Analysis Of Strategies And Corresponding Challenges Of An Ageing Workforce

COUNTRY OF STUDY	FREQUENCY (%)	N
AMERICA	16.7	4
AUSTRALIA	12.5	3
EUROPE (IN GENERAL)	4.2	1
GERMANY	4.2	1
NETHERLANDS	8.3	2
POLAND	12.5	3
JAPAN	12.5	3
KOREA	8.3	2
TAIWAN	8.3	2
THAILAND	8.3	2
INDIA	4.2	1
<b>JOURNALS</b>		
OECD	22.7	5
JOURNAL OF SOCIAL POLICY	9.1	2
JOURNAL OF AGING AND SOCIAL POLICY	9.1	2
MANAGEMENT REVUE	4.5	1
FRONTIERS IN PSYCHOLOGY	4.5	1
JOURNAL OF POPULATION AGEING	4.5	1
JOURNAL OF POLICY MODELING	4.5	1
AUSTRALIAN JOURNAL OF MANAGEMENT	4.5	1
JOURNAL OF AMERICAN SOCIETY ON AGING	4.5	1
JOURNAL OF POPULATION RESEARCH	4.5	1
GERONTOLOGY & GERIATRIC MEDICINE	4.5	1
AGEING INTERNATIONAL	4.5	1
BMC PUBLIC HEALTH	4.5	1
WORK, AGING AND RETIREMENT	4.5	1
THE PUBLIC POLICY AND AGING REPORT	4.5	1
<b>BOOK</b>		
CURRENT AND EMERGING TRENDS IN AGING AND WORK	4.5	1
<b>YEAR OF PUBLICATION</b>		
2013-2018	68.2	15
2018-2023	31.8	7
<b>METHODOLOGY</b>		
QUANTITATIVE	27.3	6
QUALITATIVE	4.5	1
MIXED	4.5	1
DISCUSSION / LITERATURE REVIEWS	40.9	9
REPORT	22.7	5
<b>NUMBER OF AUTHOR(S)</b>		
SOLE	13.6	3
CO-AUTHORED	86.4	19

Table 7: Descriptive Statistics of Articles Coded in the Study  
*Note. Frequency for Country of Study is based on n=24 instead of n=22*

## Appendix B: Returning to the Labour Force: Leveraging Mature Workers and Women with Caregiving Duties (Focus Group Discussions)

S/N	Type	Gender	Ethnicity	Age	Marital Status	Highest Education Level
P1	Mature Worker	Female	Chinese	44	Married	Degree
P2	Mature Worker with caregiving duties	Female	Eurasian	53	Divorced	Masters
P3	Mature Worker with caregiving duties	Female	Chinese	53	Single	Graduate
P4	Mature Worker with caregiving duties	Female	Chinese	58	Married	Diploma
P5	Mature Worker with caregiving duties	Female	Chinese	47	Divorced	Diploma
P6	Mature Worker	Female	Chinese	56	Married	Degree
P7	Mature Worker	Female	Indian	53	Single	Degree
P8	Mature Worker with caregiving duties	Female	Chinese	60	Married	O levels
P9	Mature Worker	Male	Chinese	57	Married	Masters
P10	Mature Worker	Male	Chinese	64	Married	Diploma
P11	Mature Worker	Male	Chinese	53	Separated	Degree
P12	Mature Worker	Male	Chinese	49	Single	A level
P13	Mature Worker	Female	Chinese	55	Married	Degree
P14	Mature Worker	Female	Chinese	58	Single	Diploma
P15	Mature Worker with caregiving duties	Female	Indian	45	Married	Degree
P16	Mature Worker	Female	Chinese	50	Married	Diploma
P17	Women with caregiving duties	Female	Chinese	35	Single	Degree
P18	Mature Worker with caregiving duties	Female	Chinese	52	Married	O levels
P19	Mature Worker with caregiving duties	Female	Chinese	52	Married	Degree
P20	Women with caregiving duties	Female	Chinese	39	Single	Degree
P21	Women with caregiving duties	Female	Chinese	25	Single	Degree
P22	Women with caregiving duties	Female	Chinese	26	Single	Degree
P23	Mature Worker with caregiving duties	Female	Indian	54	Single	Masters
P24	Women with caregiving duties	Female	Chinese	34	Married	Degree
P25	Mature Worker	Male	Chinese	47	Married	Masters
P26	Mature Worker	Male	Chinese	53	Single	Degree
P27	Mature Worker	Female	Chinese	47	Single	Degree
P28	Mature Worker with caregiving duties	Female	Indian	52	Divorced	Diploma
P29	Mature Worker with caregiving duties	Female	Chinese	50	Married	A levels
P30	Mature Worker with caregiving duties	Female	Chinese	62	Not Disclosed	Degree

Table 8: Demographic Profile Of FGD Participants

## Interview Guide

### 1. Returning to the Labour Force: Leveraging Mature Workers and Women with Caregiving Duties (Focus Group Discussions)

#### **Perceived Facilitating Factors To Staying In Employment**

1. So far, how is your experience working in your current company?
  - What are the reasons that make you feel good working in your company?
  - What are the reasons that make you feel that things can be better?
2. Most of you have been in your current company for X to Y years, what are the factors that made you want to work longer in the company?
3. What are the working arrangements/working conditions that you think were good in supporting you as a mature worker/woman with caregiving duties?
4. Can you share with me about your company culture?
  - In terms of the interaction with your colleagues and supervisors, how has it been like for you?
5. What were some HR policies that were implemented that you think were helpful for you as a mature worker/woman with caregiving duties?
6. Were there any practices implemented in your company that were helpful e.g., job redesign, job sharing?

#### **Perceived Barriers To Staying In Employment**

7. What are some of the instances that had make you think twice about staying in your current job?
8. What were some of the challenges that you faced as a mature worker/woman with caregiving duties in continuing to work?
9. What changes do you hope to see in your company that could better support mature workers/women with caregiving duties?

## Experience In Gaining Employment

10. How has it been like for you in trying to find a job as a mature worker/as a woman with caregiving duties – pre-COVID, during the pandemic, and during this endemic stage?
  - How long did you take to find a job?
11. What are the factors that have helped you in finding a job?
12. What are the factors that made it challenging for you in finding a job?
13. How did you overcome these challenges?
  - Did you tap on any government initiatives to help you during job seeking?
14. For you personally, especially as a mature worker/woman with caregiving duties, when you apply for a job, what are one or two things that you feel are important for the job to offer to you?
  - What are the things that you look for in the job?
  - Probe: good salary, flexible work week/work hours, good supervisor, supportive colleagues
15. What are some of the challenges that you faced?
16. What do you think can better help you to finding a job?

## 2. In-Depth Interviews with HR Leaders

### Warm-up

1. What are the changes to the workforce profile in your organisation over the years?
  - Younger/older, male/female, educational qualifications, years of prior experience, no. of previous jobs held/number of companies joined, permanent/contract/freelance proportion
  - Typically, how long do employees stay with the organisation?
  - Is there a longest serving employee in your organisation? How long has the individual been with your organisation?
  - Could you share the percentage of mature workers in your organisation?

## **Impact Of Ageing Workforce On Organisation**

2. We have observed an ageing population around the world, how has it affected your organisation?
3. What are some of the challenges that the organisation face with an ageing workforce?
  - Saturation of upper management/less career progression opportunities for younger employees, harder to find qualified younger employees, reduced productivity, reluctance to upskill/digitalise among older employees
4. Can you share your organisation's approach to addressing an ageing workforce?
  - What are some adjustments made to the business strategy, environment, and processes?
  - Are there any changes to processes or streamlining of processes to address the ageing workforce?
5. What are the short-term or long-term plans that the organisation have to address the ageing workforce?
6. How effective are these approaches/strategies in helping the organisation manage an ageing workforce?

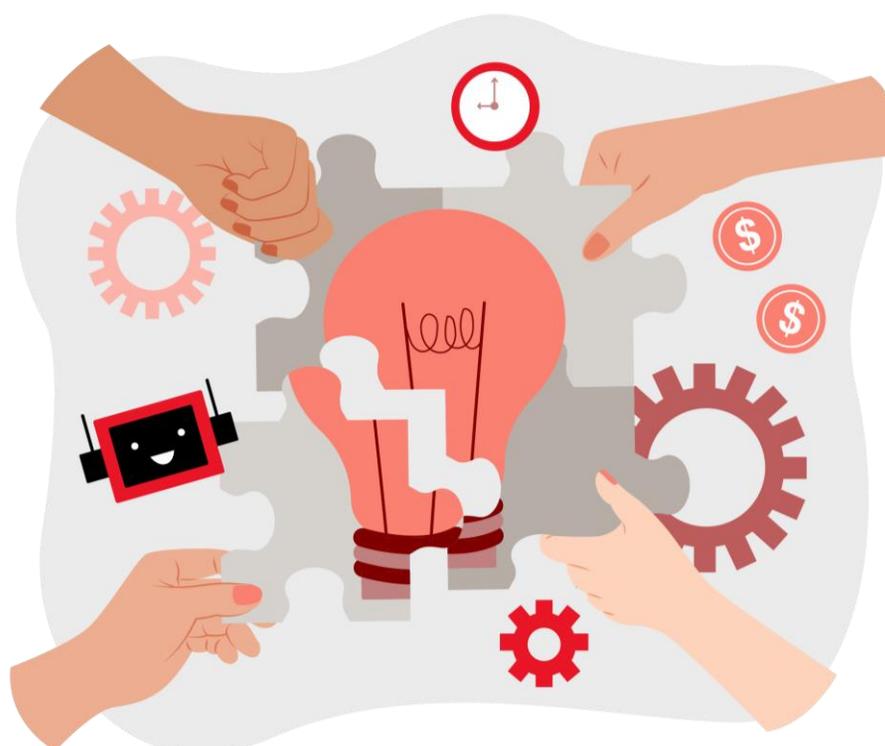
## **HR Policies**

7. How does your organisation entice mature workers to join?
  - What is the employee value proposition (EVP) to make the organisation an enjoyable and productive place for mature workers?
  - Are there any specific policies or work benefits to look after the wellbeing of mature workers?
8. How does your company engage mature workers?
9. How does your organisation bridge the gap between younger workers and mature workers?
  - What are your observations of how young supervisors in your company interact with mature workers?
10. What are some efforts by your organisation to retain mature workers?
11. Many organisations have adopted new technology or automation, how does your organisation support mature workers in picking up new skills?

12. For mature workers moving towards their retirement age, what are the policies / framework that your company have adopted to support them with the transition?
13. Are there any government support schemes / incentives or upskilling that your company has tapped on to hire and retain mature workers?
14. What further support will organisations need?
  - Besides financial support from the government?

### **Forward Plans**

15. Moving forward, what do you think organisations need to do more or change to cushion the impact of an ageing workforce?
16. Do you think organisations can do more to support mature workers in helping them to stay in employment?



# Appendix C: Technical Notes

## 1. Labour Force Projections

### The Model

To generate our forecast, we estimate a  $p$ -order ARMA model

$$y_t = \sum_{i=1}^p \alpha_i y_{t-i} + \sum_{j=1}^m \beta_j x_{t-j} + \varepsilon_{it}$$

where  $y_t$  is the labour market related time series,  $y_{t-i}$  is its  $i$ th lagged, and  $x_{t-j}$  is the  $j$ th lagged of the CPI inflation, GDP growth and growth in value added per worker. We estimate the model for each labour market time series with and without the external covariates  $x_{t-j}$ . We report the forecast of both results in Section 3 below.

To estimate the model, we employ artificial neural network autoregression of order  $p$  (NNAR( $p$ )). The reason for using NNAR( $p$ ) over the standard autoregressive moving-average (arima) model is that the former allows the time series to capture fluctuations that are asymmetric. For the choice of lags, we choose  $p=7$  so that  $y_t$  can be predicted by its own lags by up to 2 years ago. Beyond two years, the longer lags of  $y_t$  may not provide strong predictive information for  $y_t$  but sacrifice degrees of freedom. We choose  $m=3$  so that the external covariates have predictive power on  $y_t$  for up to a year. Like before, these lags were chosen to balance between fitting a more complex model and the data available for model fitting.

As NNAR( $p$ ) requires a starting point to initialise the optimisation problem, we estimate the model 50 times with different starting points and average the forecast. We choose a forecasting horizon of 20 periods (i.e., quarters) ahead, which is equivalent to forecasting the labour market time series for five years ahead.

The reason for not choosing to forecast over an even longer horizon (i.e., more than five years ahead) is because our labour market time series do not exhibit clear long-term trends that can be exploited for long-term projections. Long-term forecasting exploits the persistent (slow-varying) component in the time series for projections; however, no clear trends can be seen in our labour market time series, which fluctuate around their respective means. Thus, it will be prudent to limit our projections to 20 quarters ahead (i.e., 5 years ahead) as it is unlikely that longer projections will provide any useful further insights.

As discussed, our model is estimated with or without external covariates (i.e.,  $\sum_{j=1}^m \beta_j x_{t-j}$ ), i.e., CPI inflation, GDP growth, and value added per worker growth. For the model that does not include the external covariates, we may forecast  $y_t$  solely using its lagged information (i.e.,  $\sum_{i=1}^p \alpha_i y_{t-i}$ ), which includes the lagged forecast of  $y_t$  (i.e., we use the forecasted values  $y_t$  to generate further forecast up to 20 quarters ahead). For the model that includes the external covariates, the forecast  $y_t$  will require the forecasted values of the external covariates as these values need to be fed

into the forecast model. To forecast the external covariates, we simply use their respective historical means. Feeding the historical means into the model is a more conservative approach than feeding in forecasted values of the external covariates, in the sense that in doing so, the forecast  $y_t$  will be driven by its own variations rather than by fluctuations of the forecasted external covariates (there will be no fluctuations if we employ their historical means).

## 2. Systematic Review of Labour Policies Across Countries Methodology

In our study, the key words “challenges”, “mature workers”, “mature workers”, “ageing workforce”, “employment” and “policies” were mainly applied in the web search and review of published online content. These key words were also paired with a determined set of countries which are of particular interest to the analysis. We limited the scope of our research article catalogues to the university’s private library and its affiliated library data bases, which include ProQuest, EBSCO, SAGE Premier and the OECD iLibrary. Published journals or country reports pertaining to Europe, Hong Kong, India, Thailand, Korea and some Pacific Rim countries such as Australia, America and Japan were selected as our areas of focus for the qualitative theme of “Types of strategies used to address challenges faced by mature workers in the workforce”.

Articles, journals, institutional reports or web books were selected based on coverage of factors inhibiting and policies that assist in the employment of mature workers in the list of included countries. Specific excerpts were then inserted into an excel sheet and categorised according to “Strategies” or “Challenges”. Countries that face a similar type of challenge associated with employment amongst mature workers, are classified under “Countries with similar challenges”. The excerpts under “Strategies” and “Challenges” apply to the first country listed in each cell. This was followed by an integration of similar interventions across all countries into a single theme. Subsequently, the same procedure was applied to problems or challenges faced by mature workers in different countries, where comparable challenges were condensed into unique themes. After prioritising the organisation of “Strategies” into non-overlapping unique themes, it was discovered that some of these strategies were targeting several different challenges. As a result, while the strategic themes were distinct, those derived from “Challenges” were more likely to be repetitive.

A research assistant independently coded articles based on the predominant concept that was portrayed in either the challenges or policies mentioned in them. While most articles had the aforementioned keywords in either their abstracts or full texts, a large segment of them were irrelevant to the study as they reported general challenges rather than explaining the policies that had been or are being practised in the highlighted countries. Another criterion for the exclusion of certain texts from our study is that although they reported the policies engaged to address the barriers towards employment for mature workers, the policies have failed or are ineffective. An illustration of this can be found in the context of Australia. Gahan et al (2017) describe the case of Australia’s “Restart Scheme”, a financial incentive encouraging employers to hire mature workers.

Unfortunately, “take-up rates have been decidedly low and the scheme has been derided as ‘a dismal failure’, ‘falling spectacularly short of its target’ (Gartrell, 2015; Opray, 2015). Department of Employment documents reveal that just 1735 people out of an expected 35,000 made use of the Restart scheme in its first year.” As such, while the article does fulfil our study criteria, it is inapplicable as the policy falls short of its objectives. Additionally, the key word “workers” in our search yielded results pertaining to occupational groups unrelated to the study. A sizeable portion of articles focused on specialised groups such as health care workers, aged care workers (instead of aged workers) and construction workers. Therefore, these journals were likewise eliminated as they were not pertinent to the study.

After filtering the results to only include texts published between a 10-year period from 2013 to 2023, the final full list of articles, reports or books comprised, was a total of  $n=35$  relevant references to our study, of which  $n=22$  are discussed in the content analysis. The remaining articles, although relevant and fulfil the inclusion criteria, the policies discussed or mentioned in them were duplicates and hence excluded.

A Co-PI and a research assistant separately and collectively read through the selected reports. When assigning codes to each challenge and strategy and thereafter developing themes based on the codes, the Co-PI discussed various aspects of the data with the research assistant. After which, they reached a unified consensus regarding the coding and interpretation of the data. The Co-PI supervised the research assistant with the coding of all 22 articles based on the predominant concept that was portrayed in either the challenges or strategies mentioned in them. The coding was completed in Excel. During the coding process, the Co-PI regularly discussed all the aspects with the research assistant and contiguously checked the codes and themes to ensure that the results were properly reported.

The reports were coded by the following order: we first coded the challenges that the ageing workforce brought about. Based on this code, we then coded the strategies that address such challenges. We then listed all the countries that implemented such strategies. When organising the themes, we moved the relevant strategies forward to highlight them.

Most of the policies gathered for the European countries (Poland, Netherlands etc.), are sourced from The European Commission. Although there are 22 articles that have been incorporated in the table, the frequency that each country of study appears in the frequency table (Table 7), may exceed that number. This is a result of some articles mentioning the policies of more than one country of interest in their publication. For instance, the 2019 European Commission paper reports on the age management policies of several specific European countries like Poland and the Netherlands, in addition to other measures that have been rolled out across Europe generally to target the issues of an ageing workforce. Consequently, while there is only one published report of the 2019 European Commission paper, it adds to the frequency number of several independent countries, thereby causing the frequency count to exceed the total number of articles.

### 3. Returning to the Labour Force: Leveraging Mature Workers and Women with Caregiving Duties (Focus Group Discussions) Methodology

This study was approved by SUSS-IRB on 16 November 2022. Fieldwork commenced on 16 January 2023 to 26 June 2023.

**Recruitment process.** Advertising posters were disseminated by NTUC strategy through their contacts and channels to recruit participants. Participants who are interested to participate in the research could sign up on the Qualtrics survey form and indicate their preferred timeslot for the FGD. Potential participants who meet the inclusion criteria were contacted and provided with more information on the FGD. The inclusion criteria were: (i) mature workers (45 to 65 years old), (ii) women with caregiving duties (21 to 65 years old) and (iii) able to read or converse in English language.

**Participants.** 43 participants were recruited to participate in the FGD, 13 participants withdrew from the sessions for personal reasons. From January 2023 to June 2023, four FGD sessions were conducted with 30 participants. Of the 4 FGD sessions, 3 sessions were conducted on SUSS campus and 1 session was conducted at NTUC meeting room. There were 13 participants who were mature workers without caregiving duties, 12 mature workers who are also women with caregiving duties, and 5 who are not mature workers but are women with caregiving duties. 24 participants were females, 6 were males. Ages ranged from 25 to 64 years old ( $M = 49.4$ ,  $SD = 9.6$ ). The demographic of the participants can be found in Appendix B.

**FGD Procedure.** Participants arrived at the seminar room located within the SUSS campus or NTUC meeting room. Prior to the start of the FGD, participants were informed that the session will be audio-recorded for transcribing purposes and the researchers may take notes to provide an audit and paper trail to strengthen the trustworthiness of the data. Participants were assured that no identifying information will be linked to their responses and that their participation is voluntary. Code numbers were used to identify participants instead of their real names. Participants were also told that they can refuse to answer any questions. Informed consent was first sought prior to the commencement of FGD.

The lead researcher, who is also the FGD facilitator, first introduced the research team to the participants. Ground rules and the purpose of the FGD were also communicated to the participants. A semi-structured interview guide (refer to Appendix B) was used to gather insights from the participants.

Each FGD session lasts from 82.4 mins to 120.2 mins, with an average time lasting 108.3 mins. At the end of the session, participants received S\$25 NTUC FairPrice voucher in appreciation for their time.

**Data analyses.** All FGD and interview sessions were transcribed verbatim by student assistants and completed transcriptions were cross-checked by the research assistant verifying with the audio files to ensure their accuracy. Verified transcriptions were loaded into MAXQDA for further analysis. Thematic analysis was used to analyse the transcripts. Lower-order themes were assigned with labels that are as close to the participants' words while higher-order themes were assigned with labels using the language of social science. The credibility of the research was ensured by maintaining all audit trails and paper trails, which recorded the development of the analysis process.

## 4. In-Depth Interviews with HR Leaders Methodology

### Research Methodology

This study was approved by SUSS-IRB on 16 November 2022. The interviews were conducted from 24 February 2023 to 14 August 2023.

**Recruitment process.** The research collaborators from NTUC Strategy distributed advertisements through their organisational contacts to recruit potential HR leaders. Interested participants sign up through Qualtrics, indicating their names and contact details. The SUSS research team then invites the HR leaders via email containing additional information to participate in the study. After which, a mutually agreed interview time slot will be arranged after detailed correspondence. The interviews are conducted online via Zoom meeting on the agreed dates and times. The inclusion criteria for HR leaders were (i) current HR leader in a locally based company and (ii) able to understand and converse in English language.

**Participants.** A total of 22 HR leaders were interviewed, representing organisations ranging from small and medium-sized enterprises (SMEs) to multinational corporations (MNCs) and government agencies. There were 9 HR leaders representing SMEs, 10 for MNCs and 3 for government agencies.

**Interview procedure.** The virtual one-to-one interviews were conducted over a Zoom Meeting, which was hosted by SUSS's Zoom Account. Participants who have accepted the invitation link will enter the Zoom meeting room during the scheduled interview time slot.

Informed consent was obtained from participants prior to the beginning of the online interview session. Once the Zoom meeting commences, the participants were firstly informed that the interview will last between 1 to 1.5 hours and that it will be recorded using an audio tape recorder for transcribing purposes. The researcher would take additional notes during the session. The participants were assured that their identity will be kept strictly anonymous and any personal information will be confidential. This will be achieved through code numbers assigned to each participant, in substitution of their real names. They are also given the option to refuse to answer any of the questions during the interview without any consequences.

The interviewer begins the session by introducing the purpose and aim of the interview session as well as providing a brief background context of the research study. A list of semi-structured interview questions was developed (refer to Appendix B) to guide the session and gather relevant insights from the participant.

Each interview session lasts from 31.1 mins to 99.6 mins. The average time for each interview is about 58.4 mins. At the end of the interview, participants received a S\$25 NTUC FairPrice voucher as a token of appreciation for their time. They are eligible for the full cash voucher regardless of whether they completed all interview questions or ended the session early.

**Data analyses.** All interview sessions were transcribed verbatim, and a research associate checked the transcripts against the audio files to ensure accuracy. MAXQDA software was used for the analysis. Thematic analysis was used to analyse the transcripts. Lower-order themes were assigned with labels that are as close to the participants' words while higher-order themes were assigned with labels using the language of social science. The credibility of the research was ensured by maintaining all audit trails and paper trails, which recorded the development of the analysis process.



## Appendix D: Supplementary Information and Notes

### Systematic Review of Labour Policies Across Countries (Supplementary Information)

#### Career Guidance Programmes and Job Training

Our analysis reveals that a large proportion of strategies being implemented to help ageing workers seek and sustain employment, can be condensed into the use of career programmes and job trainings targeted at mature workers. According to Wandner et al. (2018), these programmes were cost-effective and significantly reduced the risk of long-term unemployment.

Programmes typically focused on training unemployed workers, assisting in matching job seekers to job vacancies, and networking opportunities to help mature workers form social and support networks (Wandner et al., 2018). However, there is growing evidence of personalised solutions such as profiling and assessments by trained career counsellors, followed by career guidance counselling and trainings to address worker-motivations and self-confidence (European Commission, 2019). Personalised action plans were established to tackle training needs of mature workers before giving them job placement support (OECD, 2015, 2018a, 2018b). These trainings and career programmes encourage up-skilling to increase the competency of mature workers who otherwise may continue to face unemployment because of outdated skills or the lack of qualifications that are deemed necessary for the current job market.

#### Employment/Tax Subsidies

A sizeable number of solutions are also aimed at encouraging employers and firms who are the main stakeholders in the employment of mature workers. Practical benefits such as tax and employment subsidies are rolled out by the government to overcome the prevalent issue of mature workers' high cost of employment. The subsidies are either utilised by employers to hire new older employees at a lower cost or they act as incentives to encourage hiring managers in retaining mature workers in the company by acquiring a reduction in their social security contribution of older employees. (European Commission, 2019).

In Japan, subsidies are provided to help firms incorporate a worker's capability and productivity at the job into their wage and personnel systems, such that they do not receive an automatic pay raise based on age and seniority, instead they are evaluated based on their job performance and abilities (OECD, 2018a). These employment subsidies act as incentives for employers in Japan to preserve the population of mature workers in their companies, by addressing their "concern about the affordability of retaining mature workers" (Schroeder et al., 2010).

### **Awareness Campaigns/Outreach Programmes**

A report by the European Commission (2019) agreed that age discrimination, compounded by negative stereotypes towards mature workers, are still troubling issues that plague the workforce. Age discrimination is generally attributed as a significant factor that diminishes “employers’ willingness to retain or hire mature workers” (European Commission, 2019). A noteworthy finding in the report also suggests that the negative perception projected on mature workers, reduces their willingness to remain in the labour force. Consequently, the loss in self-esteem decreases their motivation to engage in job search, ultimately creating a vicious cycle of unemployment (European Commission, 2019).

It is therefore imperative to revise this obstructive narrative that employers may possess towards the capabilities of mature workers. Innovative methods that have been designed include the “Life is passion” campaign in Poland, featuring television and other media coverage that defy the stereotypical negative attributes of older people and substitutes them with favourable images (OECD, 2015).

### **Implementation of Anti-Discrimination Policies**

A more legislative approach to impede age discrimination is through official laws and constitutions. Most countries have enacted anti-discrimination policies that forbid ageist employment practices such as the Age Discrimination in Employment Act (ADEA) (OECD, 2018c). Apart from policies pertaining to anti-discrimination, laws enforcing the equal opportunity and equal treatment of mature workers, are also practised in Taiwan. Under the Middle-Aged and Elderly Employment Promotion Act, a substantial fine can be charged to employers who are culpable of engaging in age discrimination practices (Goh et al., 2023). Ageism and negative stereotypes that condemn mature workers to unfavourable job prospects, are pervasive throughout the world. Creating a diversity-valuing organisational culture would be beneficial in challenging these existing conventional views that pervade through systemic structures.

### **Health Protection And Promotion**

Mature workers are particularly prone to health risks and age-related illnesses. Ageing is generally associated with one’s deterioration in physical health and cognition, and an increased susceptibility to injury, diseases, and chronic health conditions (McMahan & Sturz, 2006). It is crucial for organisations to implement measures that will address the health concerns of mature workers, in the context of a current labour market which requires people to continue working into old age. In India, Laishram and Melody (2021) indicated several schemes catered specifically to employees who are of mature age and are working in rural or agricultural areas. The Indian government enacted the Unorganised Workers Social Security Act (UWSSA) in 2008, consisting of three main schemes that mainly contribute to areas such as health insurance coverage, pension, and additional monetary benefits (Laishram & Melody, 2021).

### **Reduce Working Hours**

Emphasis on reducing work hours was a common strategy among several countries. With a decrease in working hours, there might have been a concern regarding the consequential deduction in wages. However, most countries addressed both issues through compensative measures. According to the European Commission (2019), workers are allowed to shift from full-time to subsidised part-time work with the use of partial retirement schemes. The loss of a portion of their income from working fewer hours is compensated by a partial pension subsidy, therefore enabling them to extend their careers rather than dropping out of employment completely. Parallel to that, Wandner et al. (2018) share a similar strategy adopted in the United States where “Work sharing” has been introduced as an alternative to retrenchment. Employees are given partial wages for their working hours and are allocated some of their weekly unemployment benefits during their non-working hours.

### **Gradual Elimination of Seniority Wage Systems**

A distinct observation from our analysis has revealed a special challenge faced by mature workers in Japan and Korea. The dominance of a seniority wage-based system is “perhaps the single most important factor” leading to the poor employment of Korea’s mature workers (OECD, 2018b). Wages are closely intertwined with increment in age, creating the duality of wage-productivity gap amongst mature workers. To tackle this threat, both governments are progressively moving towards a more skills-based wage system. The Korea Labour Foundation educates companies on guidelines and best practices to assist in the transition away from traditional means of setting wages while the National Competency standards establishes job categorisation where each category consists of necessary skills and qualifications that workers are required to obtain (OECD 2018b). These measures provide a way of legitimising wage systems that are founded on workers’ capabilities in place of their age. Similarly, Japanese organisations have begun introducing wage contracts that are compatible to an employee’s responsibilities, shifting the focus away from age elements (OECD, 2018a).

### **Retirement/Pension Reforms**

The primary reason for mature workers’ early exits from the labour force may be a result of their wish to draw down on their old-age benefits from retirement and pension schemes (Martinez-Fernandez et al., 2013). Our findings indicated that most countries are aware of this specific challenge and have taken active steps to resolve this, most of which involve pension reforms. Increasing the retirement age complements the pension reforms as a comprehensive measure to reduce the attractiveness of early retirement and terminate the possibility of “state-financed early retirement pathways” (Hofacker et al., 2016). This encourages older employees to remain in the workforce and improve their employment rate (Martinez-Fernandez et al., 2013). Japan has established a retirement scheme that is tied to tenure rather than age to nurture dedication and commitment to the company. The prospect of a higher retirement sum saved up from extending their work lives, mitigates the challenge of early retirement in mature workers (Sueki, 2016).

### **Financial Support For Self-Employment**

In America, the unincorporated self-employment rate for workers aged 65 years old and above was the highest at 15.5 percent as compared to those aged 16 to 24 (1.9 percent) (Hipple & Hammond, 2016). In view of an expanding self-employed population amongst mature workers and retirees, some countries have taken measures to help this demographic of workers transition from full-time employment to part-time or self-employed job arrangements. In the United States, the Self-Employment Assistance (SEA) programme compensates eligible unemployed workers while they establish their own microenterprises, usually comprising of a single owner-operated business (Wandner et al., 2018). SEA is exceptionally effective for mature workers who occupy a significant portion of the self-employed population and boast higher rates of success in SEA businesses (Wandner et al., 2018). Similarly, in Taiwan, the government has initiated free entrepreneurship courses for business start-ups and offers low-interest loans to applicants (Lin et al., 2015).

### **Flexible Work Arrangement**

In view of health concerns and the overall well-being of mature workers, Australia has extended the legal right to request for flexible work arrangements to encompass mature workers aged 55 years old and above (Noone et al., 2018). This is one of numerous ways in the larger scheme of advocating for improvements in work-life balance and consequently, the general welfare of employees. Noone et al (2018) also highlights the significance of having flexibility in working-time arrangements, especially for older men and women involved in caregiving duties. The autonomy over their working hours encourages prolonged participation in the workforce (Noone et al., 2018).

### **Results and Discussion**

An overwhelming majority of the studies are obtained from the Organisation for Economic Co-operation and Development (OECD) iLibrary. The OECD is an international organisation that collaborates with policy makers and governments to publish the latest policies and research on key global issues. Their content allows for an exhaustive view of countries and the latest developments in specific fields. It is therefore unsurprising that most of the data accumulated for our study are derived from the OECD iLibrary platform, given that the content analysis places its central focus on policies that have been chartered in different countries to resolve or alleviate issues surrounding mature workers' employment. The European Commission has also been particularly informative for the study's analysis of international policies. The European Commission assists in the development and evaluation of the EU's general laws and policies, in conjunction to providing regular reports.

In Singapore, it is apparent that there is an abundance of government support to encourage businesses to employ senior workers. Legislations such as the Senior Worker Early Adopter Grant have been made to incentivise organisations to boost the uptake and retention of mature workers even past their statutory retirement age (Lee, 2022). Other types of support to help companies in continuing to leverage the valuable manpower pool from mature workers include the Part-time Re-employment Grant and Support for Job

Redesign (Lee, 2022). Furthermore, by tapping on the Senior Employment Credit, employers can receive wage subsidies if they hire Singaporean senior workers aged 55 and above and earning up to \$4,000/month (Lee, 2022). This maximises the talents and expertise that the mature workforce can bring to the local economy while sustaining the labour pool. To further support a longer working life, the government's Central Provident Fund Board (CPF) has invented the Workfare Income Supplement (WIS) scheme to supplement their CPF savings by providing cash payments and additional CPF contributions (Central Provident Fund Board (CPF) Board, 2023).

The government has also enabled an easier process for workers who wish to return to the workforce. MOM and Workforce Singapore (WSG) have created the Adapt and Grow initiative, offering job matching services as well as providing a platform for jobseekers to temporarily experiment in interested jobs while receiving training allowance through a Career Trial (Lee, 2022). Singapore's re-employment age has also been raised from 67 to 68 on 1 July 2022 to prolong the professional careers of its mature workers who wish to remain in the labour force for as long as possible. For those looking for a career switch, WSG has a Professional Conversion Programme aimed specifically at workers aged 40 and above to learn and equip themselves with new skills that will allow them to transition into a new career and experience a different work-life trajectory, thereby retaining human capital in the workforce (WSG, 2020).



In Table 9, we compare the types of initiatives that have been implemented in other countries to what has been offered in Singapore.

	SG	KR	JP	TW	TH	IN	AU	US	GER	PL	NET
Features / Strategies											
Career guidance programmes / Job training	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
Employment/Tax subsidies	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
Awareness campaigns/Outreach programmes							✓	✓	✓	✓	✓
Implementation of Anti-discrimination policies	✓	✓		✓	✓		✓	✓	✓	✓	✓
Health protection and promotion	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reduce working hours	✓	✓	✓				✓	✓	✓		✓
Gradual elimination of seniority wage systems	✓	✓	✓								
Retirement/Pension Reforms	✓		✓				✓		✓	✓	✓
Financial support for self-employment		✓	✓	✓				✓	✓	✓	✓
Flexible work arrangements	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Mentoring / Intergenerational collaboration											✓
Foreign labour intake	✓		✓				✓	✓	✓		✓

Table 9: An International Comparison Of National-Level Policies To Prolong Work Life

**Key:**

SG-Singapore, KR-Korea, JP-Japan, TW-Taiwan, TH-Thailand, IN-India, AU-Australia, US-America, GER-Germany, PL-Poland, NET-Netherlands

# Appendix E: Movement Towards Automation

## 1. Movement Towards Automation (Supplementary Figures)

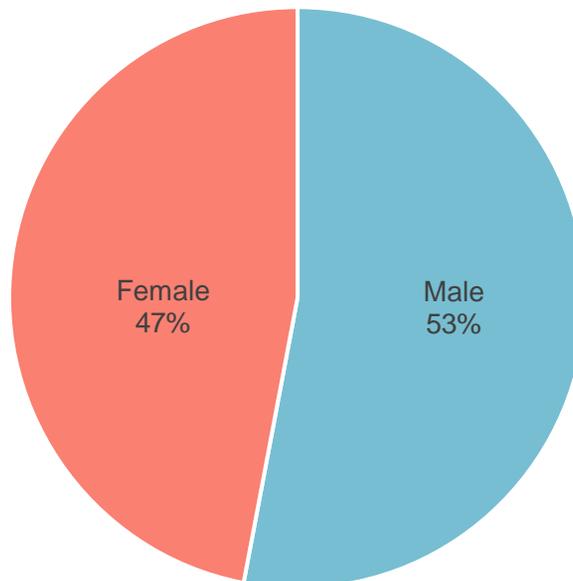


Figure 34: Employed Residents Aged 15 Years And Over In 2022 At High Risk Of Computerisation: Breakdown By Sex

Since there are more male workers than female workers in the labour market, the breakdown of high-risk employees by sex shows that slightly more male workers are likely to be affected by automation (though the proportion of male workers that are at high risk is slightly less than that of female workers).

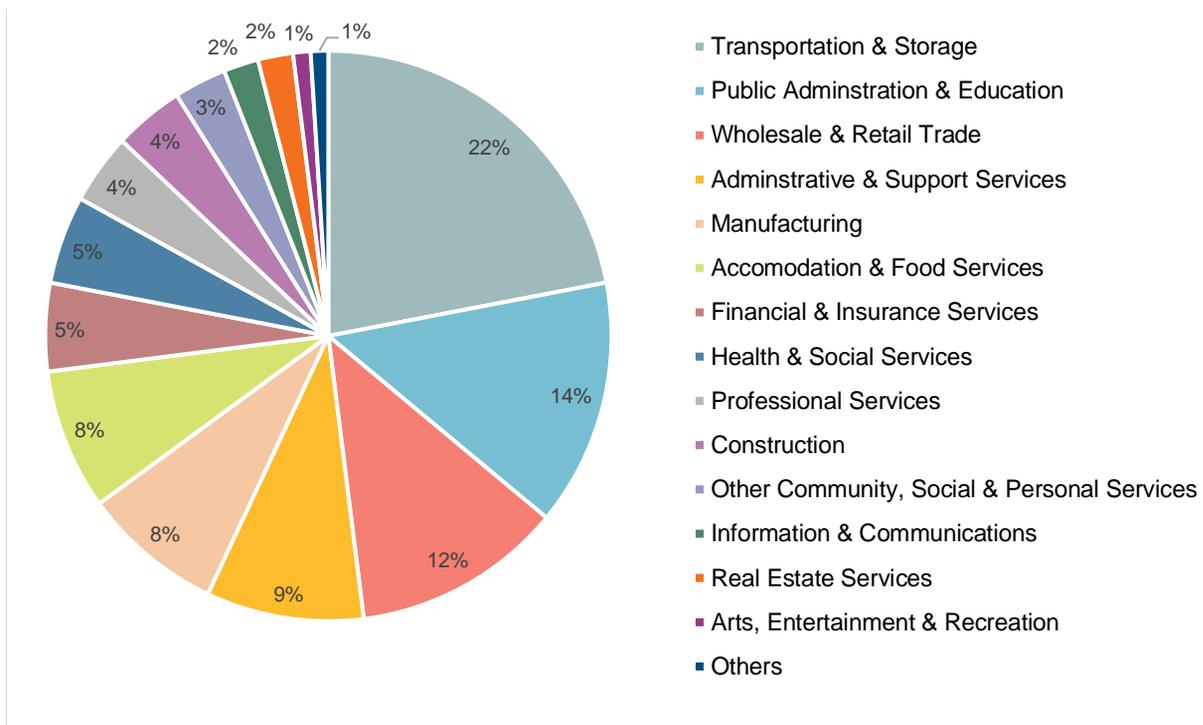


Figure 35: Employed Residents Aged 15 Years And Over In 2022 At High Risk Of Computerisation: Breakdown By Age

When we breakdown the high-risk workers by age, 14% of them are aged between 60-64 years old, followed by 13% aged between 55-59 years old, and 10% aged between 50-54 and 65-69 years old respectively. Though it is more difficult to reskill and upskill mature workers, there is still a need to promote lifelong learning culture to even the mature and old age groups, especially in an era when the technology advances much faster than ever.



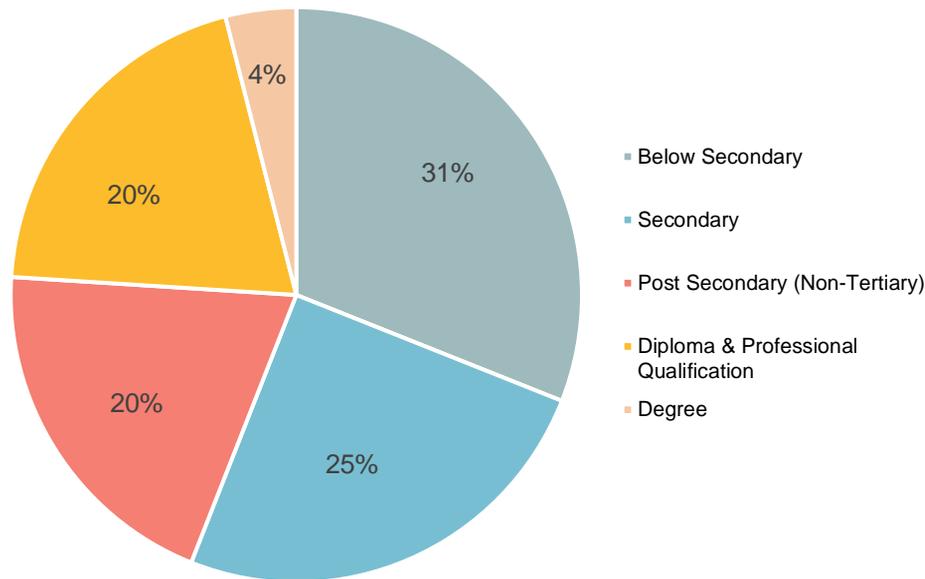


Figure 36: Employed Residents Aged 15 Years And Over In 2022 At High Risk Of Computerisation: Breakdown By Education

Among the high-risk workers, 31% have below secondary education, and 25% have secondary education. It is interesting to note that 4% of high-risk workers are degree holders. This seemingly inexorable march towards automation and computerisation may have spill over effects.

We next examine how automation in Singapore may affect employment based on sex, age, and education levels. There is little difference in the proportion of employees at high risk by sex. About 24% of male workers and female workers are susceptible to computerisation.



Figure 37: Proportion Of Employed Residents Aged 15 Years And Over In 2022 At High Risk Of Computerisation: By Sex

Figure 38 shows that both young and old workers are more susceptible to computerisation. Considering that young workers will remain in the labour market for a long time, it is crucial to upskill them to meet the needs and requirements of the labour market.

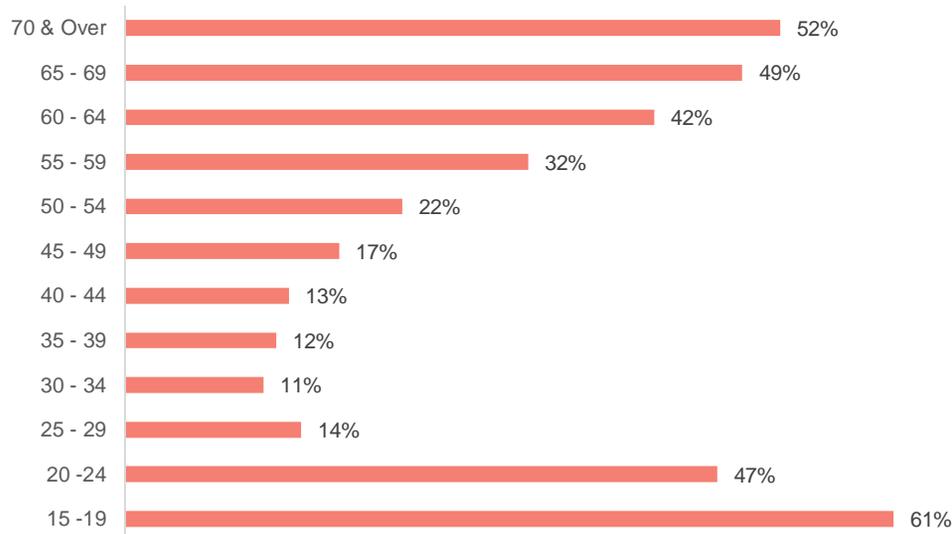


Figure 38: Proportion Of Employed Residents Aged 15 Years And Over In 2022 At High Risk Of Computerisation: By Age

Figure 39 shows that 58% of people with below secondary education are at high risk, and this ratio decreases when the education attainment gets higher and higher. This is consistent with the findings of other studies and the general expectation that less educated people are more susceptible to computerisation.

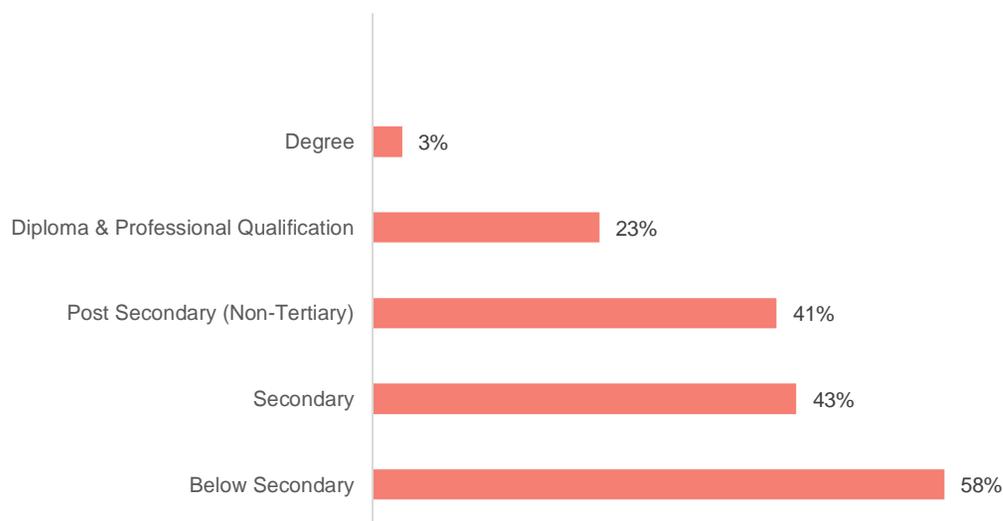


Figure 39: Proportion Of Employed Residents Aged 15 Years And Over In 2022 At High Risk Of Computerisation: By Education

## 2. Movement Towards Automation (Supplementary Information)

In this part, the technological advancement is measured by number of installations, or operational stock of industrial robots, retrieved from International Federation of Robotics (IFR). There are data for 75 countries for the period of 1993-2021. Some countries have the data by industry starting from 1993, but most of the industrial robots are installed in the manufacturing industry. For Singapore, the breakdown by industry only starts in 2005. Given the limitation of the industry level data, we will only look at the overall annual number of robots (either installed, or in terms of the operational stock) in the country covered in IFR.

Our sample includes 63 countries and covers the period of 2005-2021. The reason why we start the analysis from 2005 is because there was the methodological change in reporting the operational stock of robots in IFR in 2004-2005 (Bordot, 2022). Therefore, to ensure the consistency of the measurement of installation/stock of robots, we kept the sample starting from 2005.

The data obtained from World Development Indicators include various types of unemployment rate, population, labour force, and GDP growth rate.

We consider the dynamic panel and the difference GMM estimation. The model is specified as follows:

$$\ln U_{i,t} = \beta_0 + \beta_1 \ln U_{i,t-1} + \beta_2 \ln \text{Install}_{i,t} + \beta_3 \ln \text{GDP}_{i,t} + \varepsilon_t$$

where the superscripts “i” and “t” represent country and year, respectively. The variables  $\ln U$ ,  $\ln \text{Install}$ , and  $\ln \text{GDP}$  stand for the logarithms of unemployment rate, number of robots per 10000 labour force, and GDP growth rate.

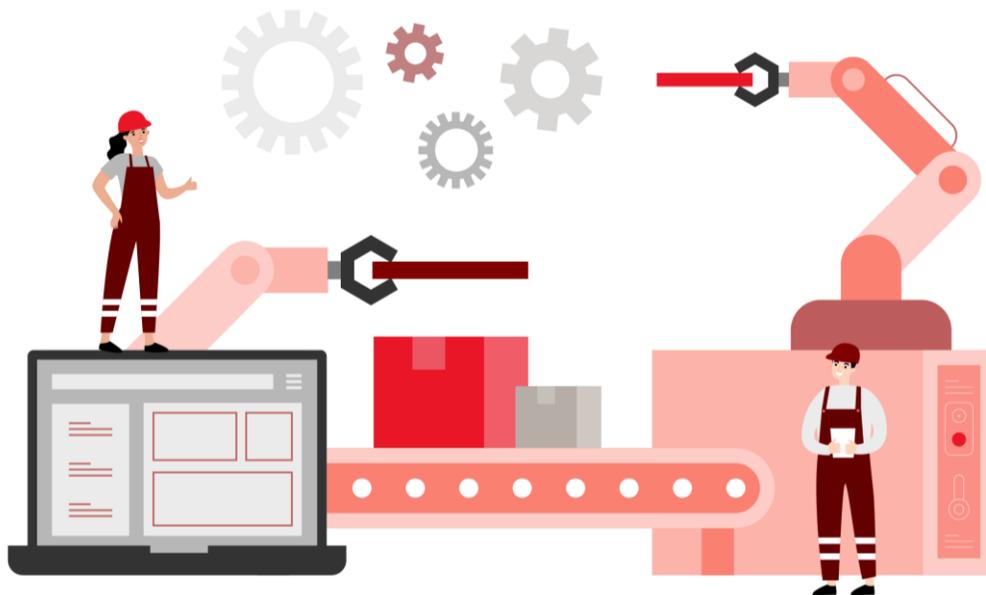


Table 10 lists the variables and the descriptive statistics. It is observed that on average, female workers have a higher unemployment rate than male workers, across age groups, and unemployment rate declines with the education level of the labour force.

Variable	Definition	Mean	SD	Min	Max	N
InU(total)	Rate of unemployment (%), log	1.831	0.674	-1.386	3.359	1800
InU(female)	Rate of unemployed female labour force (%), log	1.908	0.696	-1.431	3.454	1800
InU(male)	Rate of unemployed male labour force (%), log	1.783	0.702	-1.351	3.357	1800
InU(youth)	Rate of unemployed labour force ages 15-24 (%), log	2.648	0.690	-0.865	4.151	2102
InU(youth female)	Rate of unemployed female labour force ages 15-24 (%), log	2.686	0.682	-0.685	4.161	1800
InU(youth male)	Rate of unemployed male labour force ages 15-24 (%), log	2.626	0.641	-0.104	4.029	1800
InU(basic education)	Rate of unemployment with basic education (%), log	2.169	0.808	-1.715	3.673	1,192
InU(intermediate education)	Rate of unemployment with intermediate education (%), log	1.956	0.631	-0.916	4.561	1,186
InU(advanced education)	Rate of unemployment with advanced education (%), log	1.481	0.592	-0.416	3.410	1,197
InInstall (per 10000 labor force)	Installations of industrial robots per 10,000 labour force, log	0.321	0.505	0	2.778	2,102
InStock (per 10000 labor force)	Operational stock of industrial robots per 10,000 labour force, log	1.006	1.191	0	4.855	2,102
InInstall (per 10000 population)	Installations of industrial robots per 10,000 population, log	0.203	0.350	0	2.333	2,102
InStock (per 10000 population)	Operational stock of industrial robots per 10,000 population, log	0.738	0.950	0	4.274	2,102
InGDP	GDP growth rate, log	1.226	0.844	-4.539	4.488	1,789

Table 10: Definition of Variables and Descriptive Statistics

Note. The table gives descriptive statistics from 1993-2021.

Table 11 shows results from the difference GMM estimation. In Model (1), we use InInstall to measure the technological advancement, i.e., the logarithm of the number of installations of industrial robots per 10,000 labour force. Results from both one-step first difference GMM and two-step first difference GMM estimations are reported. In Model (2), the technological advancement is measured by InStock, which is the logarithm of the number of operational stock of industrial robots per 10,000 labour force. Similarly, both one-step and two-step first difference GMM results are shown. It is noted that:

1. The coefficient of InU, t-1 is significant and positive, at 1% significance level; suggesting that the unemployment rate is persistent and autocorrelated.
2. The coefficient of InGDP is significant and negative, at 1% significance level; suggesting that a 1% increase in GDP growth rate is associated with 0.040~0.046% deduction of unemployment rate.
3. The coefficient of InInstall is significant and negative, at least at the 10% significance level; suggesting that new installations of industrial robots are associated with less unemployment, or improved employment in labour force. Specially, if the installations per 10,000 labour force increase 1%, unemployment rate will reduce by 0.037%~0.039%.

The coefficient of  $\ln\text{Stock}$  is significant and negative, at the 5% significance level; this reinforces the finding from point (3), and suggests that more usage of industrial robots are associated with better employment results of the work force. Specifically, if the stock per 10,000 labour force increases 1%, unemployment rate will reduce by 0.024%~0.025%.

The diagnostic checks show the errors are not serial correlated (AR(2)), and the instrument variables are valid (Hansen statistic).

Variables	Model 1				Model 2			
	One-step difference		Two-step difference		One-step difference		Two-step difference	
$\ln U, t-1$	0.948***	(0.029)	0.943***	(0.028)	0.942***	(0.032)	0.936***	(0.032)
$\ln\text{Install}$	-0.039**	(0.020)	-0.037*	(0.023)				
$\ln\text{Stock}$					-0.025**	(0.011)	-0.024**	(0.010)
$\ln\text{GDP}$	-0.046***	(0.009)	-0.040***	(0.010)	0.046***	(0.009)	0.040***	(0.010)
Year dummies	Yes		Yes		Yes		Yes	
No. of Obs.	823		823		823		823	
Groups/Instruments	63/45		63/45		63/45		63/45	
AR(1)	-3.16	[0.002]	-3.19	[0.001]	-3.10	[0.002]	-3.19	[0.001]
AR(2)	0.58	[0.565]	0.57	[0.566]	0.55	[0.581]	0.55	[0.582]
Hansen Statistic	47.19	[0.269]	47.19	[0.269]	47.38	[0.263]	47.38	[0.263]

Table 11: Results from Difference GMM Estimation (per 10,000 labour force)

*Note.* Robust standard errors in parentheses. P-values in square brackets. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .  $\ln\text{Install}$  and  $\ln\text{Stock}$  are logarithms of installations/operational stocks per 10000 labour force.

Table 12 repeats the analysis by measuring  $\ln\text{Install}$  and  $\ln\text{Stock}$  using per 10,000 population rather than 10,000 labour force. The findings are the same qualitatively, with only changes in the size of the effect.

Variables	Model 1				Model 2			
	One-step difference		Two-step difference		One-step difference		Two-step difference	
InU, t-1	0.948***	(0.029)	0.942***	(0.028)	0.944***	(0.032)	0.937***	(0.031)
InInstall	-0.052**	(0.026)	-0.050	(0.031)				
InStock					-0.032**	(0.014)	-0.030**	(0.013)
InGDP	-0.046***	(0.009)	-0.040***	(0.010)	-0.046***	(0.009)	-0.041***	(0.010)
Year dummies	Yes		Yes		Yes		Yes	
No. of Obs.	823		823		823		823	
Gropus/Instruments	63/45		63/45		63/45		63/45	
AR(1)	-3.16	[0.002]	-3.19	[0.001]	-3.10	[0.002]	-3.19	[0.001]
AR(2)	0.57	[0.566]	0.57	[0.567]	0.55	[0.582]	0.55	[0.583]
Hansen Statistic	47.15	[0.270]	47.15	[0.270]	47.30	[0.265]	47.30	[0.265]

Table 12: Results from Difference GMM Estimation (per 10,000 population)

Note. Robust standard errors in paratheses. P-values in square brackets. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. InInstall and InStock are logarithms of installations/operational stocks per 10000 population.

Next, we will use only the variable InInstall measured as the logarithm of the number of industrial robots installations per 10,000 labour force, and the one-step difference GMM approach for the continuing breakdown analysis, as Table 11 and Table 12 show that the results are robust for InInstall and InStock, measured by per 10,000 labour force or per 10,000 population, using either one-step or two-step difference GMM.

Table 13 breaks down the analysis by looking at the impact on the male and female unemployment rate, as well as the impact on the youth unemployment rate. Interestingly, the results show that the robots utilisation has a larger impact on the male employment, improving its unemployment rate by 0.045% (vs 0.033% deduction for female unemployment rate). Furthermore, the impact on the overall unemployment rate seems to be on par with the impact on the youth unemployment. And among the youth labour force, the impact on male is stronger than the impact on female youth labour force. However, it should be noted that the model of the youth unemployment rate is suffering from the 2<sup>nd</sup> order autocorrelation, and it should be further refined to get a better estimate of the impact.

Variables	Total	Female	Male	Youth_Total	Youth_female	Youth_male
lnU, t-1	0.948*** (0.029)	0.959*** (0.026)	0.922*** (0.034)	0.919*** (0.045)	0.929*** (0.037)	0.876*** (0.049)
lnInstall	-0.039** (0.020)	-0.033* (0.019)	-0.045** (0.022)	-0.039** (0.016)	-0.038** (0.018)	-0.049** (0.020)
lnGDP	-0.046*** (0.009)	-0.046*** (0.009)	-0.047*** (0.009)	-0.046*** (0.008)	-0.047*** (0.010)	-0.044*** (0.009)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
No. of Obs.	823	823	823	963	823	823
Gropus/ Instruments	63/45	63/45	63/45	74/45	63/45	63/45
AR(1)	-3.16 [0.002]	-2.61 [0.009]	-3.53 [0.000]	-4.38 [0.000]	-3.66 [0.000]	-4.48 [0.000]
AR(2)	0.58 [0.565]	1.46 [0.144]	0.62 [0.534]	1.65 [0.099]	2.09 [0.037]	1.89 [0.058]
Hansen Statistic	47.19 [0.269]	47.19 [0.269]	47.29 [0.265]	49.56 [0.197]	42.95 [0.430]	41.76 0.481

Table 13: Results from First-Step Difference GMM Estimation: By Gender and Youth (installations of industrial robots per 10,000 labour force)

Note. Robust standard errors in parentheses. P-values in square brackets. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. lnInstall is the logarithm of installations of industrial robots per 10000 labour force.

Lastly, Table 14 shows the estimation results by looking at the labour force with different education levels. The coefficient of lnInstall is insignificant for the labour force with basic and advanced education but is significantly negative for the labour force with intermediate education. This suggests that adoption of industrial robots increases job opportunities for medium skilled workers, but not for low or high skilled workers.

Variables	Basic	Intermediate	Advanced
lnU, t-1	0.899*** (0.077)	0.943*** (0.022)	0.907*** (0.038)
lnInstall	-0.033 (0.030)	-0.052** (0.024)	-0.045 (0.030)
lnGDP	-0.038*** (0.011)	-0.059*** (0.009)	-0.060*** (0.009)
Year dummies	Yes	Yes	Yes
No. of Obs.	609	611	612
Gropus/ Instruments	55/44	56/44	56/44
AR(1)	-2.22 [0.026]	-3.07 [0.002]	-4.53 [0.000]
AR(2)	1.35 [0.176]	0.63 [0.532]	-0.80 [0.427]
Hansen Statistic	48.05 [0.209]	45.30 [0.297]	46.36 [0.261]

Table 14: Results from First-Step Difference GMM Estimation: By Education (installations of industrial robots per 10,000 labour force)

Note. Robust standard errors in parentheses. P-values in square brackets. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. lnInstall is the logarithm of installations of industrial robots per 10000 labour force.

## Appendix F: Quantitative Survey

Variables	Categories	Percentage
Respondents' role in organisation	HR manager	35.1
	C-suite level	32.6
	Hiring manager	32.3
Industry	Wholesale and Retail Trade	22.1
	Manufacturing	22.0
	Financial Services	15.0
	Construction	9.3
	Information Services and Telecommunications	8.0
	Accommodation & Food Services	5.8
	Transportation & Storage	4.8
	Public Administration and Education	4.2
	Professional Services	2.8
	Health and Social Services	2.7
	Real Estate	1.7
	Arts, Entertainment and Recreation	1.5
	Others	0.2
Size of organisation	Over 200 employees	50.4
	50-200 employees	29.6
Experience hiring mature workers	Yes	90.3
	No, but open to hiring these workers/have tried hiring these workers	9.7
45-54 years old workers in organisation	Yes	97.8
	No	2.2
55 years old and above in organisation	Yes	69.5
	No	30.5
45-54 years old in team	Yes	94.3
	No	5.7
55 years old and above in team	Yes	71.6
	No	28.4

Table 15: Descriptive Statistics of Respondent Profile

Top 8 industries among employed residents aged 55 and above: <ul style="list-style-type: none"> <li>• Construction</li> <li>• Financial Services</li> <li>• Food &amp; Beverage Services</li> <li>• Health and Social services</li> <li>• Land Transport and Supporting Services</li> <li>• Public Administration and Education</li> <li>• Retail Trade</li> <li>• Wholesale Trade</li> </ul>	Min. 60% of total sample size (n=360)
Other industries	Max. 40% of total sample size (n=240)
5. Do you have experience hiring workers aged 45 and above?	Yes- Min. 60% of total sample size (n=360)

Table 16: Quotas Employed For Each Category

<b>Q1 Do you agree to take part in this survey?</b> Yes No	Close Survey
<b>Q2 What is your role in your organisation?</b> C-suite level Hiring manager HR manager	Close Survey
<b>Q4 What is the size of your organisation?</b> 1. 1 to 49 employees 2. 50-200 employees 3. Over 200 employees	Close Survey
<b>Q5 Do you have experience hiring workers aged 45 and above?</b> 1. Yes 2. No, but I am open to hiring these workers/I have tried hiring these workers 3. No, and I am not open to hiring these workers	Close Survey

Table 17: Inclusion/Exclusion Criteria

## References

Agrawal, A., Gans, J. S., & Goldfarb, A. (2019). Artificial intelligence: the ambiguous labor market impact of automating prediction. *Journal of Economic Perspectives*, 33(2), 31-50.

Business.gov.nl. (2017a) Subsidies and tax schemes for self-employed professionals. business.gov.nl. <https://business.gov.nl/starting-your-business/starting-as-a-self-employed-professional/subsidies-and-tax-schemes-for-self-employed-professionals/>

Caines, Crane, M. F., Noone, J., Griffin, B., Datta, S., & Earl, J. K. (2020). Older workers: Past, present and future. *Australian Journal of Management*, 45(3), 425–448. <https://doi.org/10.1177/0312896220918912>

Chen, Zhao, N., Fan, H., & Coyte, P. C. (2017). Informal Care and Labor Market Outcomes: Evidence From Chinese Married Women. *Research on Aging*, 39(2), 345–371. <https://doi.org/10.1177/0164027515611184>

Chen, M.K., and Gardiner, E. (2019). Supporting older workers to work: A systematic review. *Personnel Review*, 48(5), 1318-1335. doi: 10.1108/PR-11-2018-0455

Cheng, H., Jia, R., Li, D., & Li, H. (2019). The Rise of Robots in China. *The Journal of Economic Perspectives*, 33(2), 71–88. <https://doi.org/10.1257/jep.33.2.71>

Choi. (2016). Older Workers and Federal Work Programs: The Korean Senior Employment Program (KSEP). *Journal of Aging & Social Policy*, 28(4), 308–324. <https://doi.org/10.1080/08959420.2016.1153993>

Connell, J., Nankervis, A., & Burgess, J. (2015). The challenges of an ageing workforce: An introduction to the workforce management issues, *Labour & Industry: A Journal of the Social and Economic Relations of Work*, 25(4), 257-264. <https://doi.org/10.1080/10301763.2015.1083364>

CPF: Workfare income supplement. Central Provident Fund Board (CPF). (2023, August 11). <https://www.cpf.gov.sg/member/growing-your-savings/government-support/workfare-income-supplement>

Ding, Zhang, G., Chambers, T., Song, M., Wang, X., & Zhai, C. (2014). Content-based citation analysis: The next generation of citation analysis. *Journal of the Association for Information Science and Technology*, 65(9), 1820–1833. <https://doi.org/10.1002/asi.23256>

Egdell, V., Maclean, G., Raeside, R., & Chen, T. (2020). Age management in the workplace: Manager and older worker accounts of policy and practice. *Ageing & Society*, 40(4), 784-804. doi:10.1017/S0144686X18001307

Eloundou, T., Manning, S., Mishkin, P., & Rock, D. (2023). Gpts are gpts: An early look at the labor market impact potential of large language models. arXiv preprint arXiv:2303.10130.

European Commission, Directorate-General for Employment, Social Affairs and Inclusion, Dohse, K., Mosley, H. (2019). PES in support of an ageing workforce: study report, Publications Office. <https://data.europa.eu/doi/10.2767/535792>

European Commission. (n.d.). Employment, Social Affairs & Inclusion. European Commission. <https://ec.europa.eu/social/main.jsp?catId=1122&langId=en&intPageId=4993>

Flynn, Schroder, H., Higo, M., & Yamada, A. (2014). Government as Institutional Entrepreneur: Extending Working Life in the UK and Japan – ERRATUM. *Journal of Social Policy*, 43(3), 677–677. <https://doi.org/10.1017/S0047279414000348>

Fuei, L. K. (2017). Automation, Computerization and Future Employment in Singapore. *Journal of Southeast Asian Economies*, 34(2), 388-399. <https://doi.org/10.1355/ae34-2h>

Goh, S. K., Wong, K. N., McNown, R., & Chen, L.-J. (2023). Long-run macroeconomic consequences of Taiwan's aging Labor Force: An Analysis of policy options. *Journal of Policy Modeling*, 45(1), 121–138. <https://doi.org/10.1016/j.jpolmod.2023.01.006>

Government of the Netherlands. (2016, October 5). Prohibition of discrimination. Discrimination | Government.nl. <https://www.government.nl/topics/discrimination/prohibition-of-discrimination>

Higo, & Klassen, T. R. (2017). Reforms of Retirement Policies: Three Common Paths in Aging in Japan and Korea. *Journal of Aging & Social Policy*, 29(1), 70–83. <https://doi.org/10.1080/08959420.2016.1187035>

Hipple, S. F., & Hammond, L. A. (2016, March 1). BLS spotlight on statistics: Self-employment in the United States. BLS Spotlight on Statistics: Self-Employment in the United States. <https://ecommons.cornell.edu/items/4d1bab52-0fe6-4e35-a19c-ef03b62573f6>

Hong, G. H., & Schneider, T. (2020, March 1). Shrinkanomics: Policy lessons from Japan on aging. IMF.  
<https://www.imf.org/en/Publications/fandd/issues/2020/03/shrinkanomics-policy-lessons-from-japan-on-population-aging-schneider>

Hofacker, Schroder, H., Li, Y., & Flynn, M. (2016). Trends and Determinants of Work-Retirement Transitions under Changing Institutional Conditions: Germany, England and Japan compared. *Journal of Social Policy*, 45(1), 39–64.  
<https://doi.org/10.1017/S004727941500046X>

Hofstede, G. (2011). "Dimensionalizing cultures: The Hofstede model in context." Online readings in psychology and culture 2(1): <https://doi.org/10.9707/2307-0919.1014>  
Tay, H. Y. (2023, September 8). Government, unions, employer groups start work on guidelines on flexible work arrangements. *The Straits Times*.  
<https://www.straitstimes.com/singapore/jobs/government-unions-employer-groups-start-work-on-guidelines-on-flexible-work-arrangements>

Karpowicz, I. (2019). Self-employment and support for the Dutch Pension Reform. *IMF Working Papers*, 19(64), 9. <https://doi.org/10.5089/9781498302807.001>

Kiettikunwong, N. (2018). Re-Employability of Older People in Khon Kaen Municipality (KKM). *Ageing International*, 43(2), 141-157. <https://doi.org/10.1007/s12126-017-9316-4>

Kooij, D. T., Jansen, P. G., Dijkers, J. S., & De Lange, A. H. (2014). Managing aging workers: A mixed methods study on bundles of HR practices for aging workers. *The International Journal of Human Resource Management*, 25(15), 2192–2212.  
<https://doi.org/10.1080/09585192.2013.872169>

Kwiatkowski, D., Phillips, P. C. B., Schmidt, P., & Shin, Y. (1992). "Testing the null hypothesis of stationarity against the alternative of a unit root". *Journal of Econometrics*. 54 (1–3): 159–178.

Laishram, L., & Melody, T. (2021). Policy reforms and changing intergenerational support of elderly in India. *Journal of Population Research*, 38(4), 401-416.  
<https://doi.org/10.1007/s12546-021-09275-z>

Lee, C. W. (2022, July 27). Re-employment and age-friendly workplace practices will support senior workers. Ministry of Manpower Singapore.  
<https://www.mom.gov.sg/newsroom/press-replies/2022/0727-re-employment-and-age-friendly-workplace-practices-will-support-senior-workers>

Lin, Peng, Y.-I., & Chen, J. (2015). Workforce Development for Older Workers in Taiwan. *The Public Policy and Aging Report*, 25(4), 143–146.  
<https://doi.org/10.1093/ppar/prv021>

Loichinger, E., & Cheng, Y. A. (2018). Feminising the workforce in ageing East Asia? The potential of skilled female labour in four advanced economies. *Journal of Population Research* (Canberra, A.C.T.), 35(2), 187–215. <https://doi.org/10.1007/s12546-018-9203-1>

Martinez-Fernandez, C., et al. (2013), “Demographic Transition and an Ageing Society: Implications for Local Labour Markets in Poland”, *OECD Local Economic and Employment Development (LEED) Papers*, No. 2013/08, OECD Publishing, Paris, <https://doi.org/10.1787/5k47xj1js027-en>

McMahan, & Sturz, D. (2006). Implications for an Aging Workforce. *Journal of Education for Business*, 82(1), 50–55. <https://doi.org/10.3200/JOEB.82.1.50-55>

Ministry of Finance. (2023, February 14). D. growing our economy and equipping our workers. Budget 2023. <https://www.mof.gov.sg/singaporebudget/budget-2023/budget-statement/d-growing-our-economy-and-equipping-our-workers#emEquipping-and-Empowering-Our-Workersem>

Ministry of Health Singapore. (2023). Living life to the fullest – 2023 Action Plan for Successful Ageing. Ministry of Health. <https://www.moh.gov.sg/docs/librariesprovider3/action-plan/2023-action-plan.pdf>

Ministry of Manpower (MOM). (2020a). Labour Force in Singapore 2020. Singapore: Ministry of Manpower. [https://stats.mom.gov.sg/iMAS\\_PdfLibrary/mrsd\\_2020LabourForce\\_survey\\_findings.pdf](https://stats.mom.gov.sg/iMAS_PdfLibrary/mrsd_2020LabourForce_survey_findings.pdf)

Ministry of Manpower (MOM). (2020b). Skills upgrading. Ministry of Manpower Singapore. <https://www.mom.gov.sg/employment-practices/skills-training-and-development/skills-upgrading>

Ministry of Manpower (MOM). (2022). Factsheet on foreign workforce policy announcements at COS 2022. Ministry of Manpower. <https://www.mom.gov.sg/-/media/mom/documents/budget2022/updates-to-ep-framework.pdf><https://www.mom.gov.sg/-/media/mom/documents/budget2022/updates-to-ep-framework.pdf>

Ministry of Manpower (MOM). (2023a). Labour Force in Singapore 2022. [https://stats.mom.gov.sg/iMAS\\_PdfLibrary/mrsd\\_2022LabourForce\\_survey\\_findings.pdf](https://stats.mom.gov.sg/iMAS_PdfLibrary/mrsd_2022LabourForce_survey_findings.pdf)

Ministry of Manpower (MOM). (2023b, September 1). Fair consideration framework (FCF). Ministry of Manpower. <https://www.mom.gov.sg/employment-practices/fair-consideration-framework>

Ministry of Manpower (MOM). (2023c, August 4). Government accepts tripartite committee final recommendations for WFL. Ministry of Manpower. <https://www.mom.gov.sg/newsroom/press-releases/2023/0804-government-accepts-tripartite-committee-final-recommendations-for-wfl>

Noone, J., Knox, A., O'Loughlin, K., McNamara, M., Bohle, P., & Mackey, M. (2018). An analysis of factors associated with older workers' employment participation and preferences in Australia. *Frontiers in Psychology*, 9. <https://doi.org/10.3389/fpsyg.2018.02524>

National Trades Union Congress (NTUC). (2023a). Union Training Assistance Programme (UTAP). NTUC. <https://www.ntuc.org.sg/uportal/programmes/union-training-assistance-programme>

NTUC. (2023b). NTUC Programmes. E-services. <https://www.ntuc.org.sg/wps/portal/up2/home/aboutntuc/whatwedo/programmes>

NTUC. (2023c). Company Training Committees. NTUC. <https://www.ntuc.org.sg/uportal/programmes/company-training-committees>

OECD. (2015), *Ageing and Employment Policies: Poland 2015*, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264227279-en>

OECD. (2018a), *Working Better with Age: Japan, Ageing and Employment Policies*, OECD Publishing, Paris. <https://doi.org/10.1787/9789264201996-en>

OECD. (2018b), *Working Better with Age: Korea, Ageing and Employment Policies*, OECD Publishing, Paris. <https://doi.org/10.1787/9789264208261-en>

OECD. (2018c), *Ageing and Employment Policies: United States 2018: Working Better with Age and Fighting Unequal Ageing*, OECD Publishing, Paris. <http://dx.doi.org/10.1787/9789264190115-en>

Park, C.-Y., Shin, K., & Kikkawa, A. (2021). Aging, automation, and productivity in Korea. *Journal of the Japanese and International Economies*, 59, 101109–. <https://doi.org/10.1016/j.jjie.2020.101109>

Rashid, S. (2023, September 7). Tripartite partners convene New Workgroup to develop the guidelines on flexible work arrangements. NTUC. <https://www.ntuc.org.sg/uportal/news/Tripartite-partners-convene-new-workgroup-to-develop-the-guidelines-on-flexible-work-arrangements/>

Remery, C., Henkens, K., Schippers, J., & Ekamper, P. (2003). Managing an aging workforce and a tight labor market: Views held by Dutch employers. *Population Research and Policy Review*, 22(1), 21–40. doi: 10.1023/A:1023543307473

Rosario, K. del. (2023, July 13). NTUC empowers youth with five key initiatives for a smooth transition to the workforce. NTUC. <https://www.ntuc.org.sg/uportal/news/NTUC%20empowers%20youth%20with%20five%20key%20initiatives%20for%20a%20smooth%20transition%20to%20the%20workforce/>

Seow, C. (2016, March 8). Singapore confronts an aging population. *The New York Times*. <https://www.nytimes.com/2016/03/08/business/international/singapore-confronts-an-aging-population.html>

Singapore Department of Statistics (SDOS). 2021. Population Trends 2021. Singapore: Department of Statistics, Ministry of Trade & Industry. <https://www.singstat.gov.sg/-/media/files/publications/population/population2021.pdf>

Singapore Department of Statistics (SDOS). (2022). Old Age Support Ratio. [singstat.gov.sg](https://www.singstat.gov.sg). <https://www.singstat.gov.sg/modules/infographics/old-age-support-ratio>

Stahler, N. (2021). The Impact of Aging and Automation on the Macroeconomy and Inequality. *Journal of Macroeconomics*, 67, 103278–. <https://doi.org/10.1016/j.jmacro.2020.103278>

Sueki, N. (2016). Ageing society and evolving wage systems in Japan \*\*. *Management Revue*, 27(1), 50-62. <https://doi.org/10.1688/mrev-2016-Sueki>

Tan Hanhonn, I. (2021, November 24). Workforce Transformation and Lifelong Learning with NTUC. NTUC. <https://www.ntuc.org.sg/uportal/news/Workforce-Transformation-and-Lifelong-Learning-with-NTUC/>

Tripartite Alliance for Fair & Progressive Employment Practices (TAFEP). (2019). Tripartite Guidelines on fair employment practices (TGFEP): TAFEP. Tripartite Guidelines on Fair Employment Practices (TGFEP) | TAFEP. <https://www.tal.sg/tafep/getting-started/fair/tripartite-guidelines>

Thanapop, S., & Thanapop, C. (2021). Work ability of Thai older Workers in Southern Thailand: a comparison of formal and informal sectors. *BMC Public Health*, 21, 1-11. <https://doi.org/10.1186/s12889-021-10974-8>

United Nations. (2019a). World population prospects 2019: Highlights (ST/ESA/SER.A/423). [https://population.un.org/wpp/Publications/Files/WPP2019\\_Highlights.pdf](https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf)

United Nations. (2019b). World population prospects 2019: Data booklets (ST/ESA/SER.A/424).

Urban Institute. (2022). *Job clubs*. Urban Institute | Local Workforce System Guide. <https://workforce.urban.org/node/37.html>

Van Horn, & Heidkamp, M. (2019). Older Workers, Precarious Jobs, and Unemployment: Challenges and Policy Recommendations. *Generations* (San Francisco, Calif.), 43(3), 21–28.

Vodopivec, M., Finn, D., Laporšek, S., Vodopivec, M., & Cvörnjek, N. (2019). Increasing Employment of Older Workers: Addressing Labour Market Obstacles. *Journal of Population Ageing*, 12(3), 273-298. <https://doi.org/10.1007/s12062-018-9236-4>

Wandner, S. A., Balducchi, D. E., & O’Leary, C. J. (2018). Public employment policy for an aging workforce. *Gerontology and Geriatric Medicine*, 4, 233372141880006. <https://doi.org/10.1177/2333721418800064>

Wong, K. W., Wong, W. L., & Feng, H. (2022, April 26). Demographic profile of seniors in Singapore - singstat.gov.sg. SingStat website. <https://www.singstat.gov.sg/-/media/files/publications/population/ssn122-pg6-9.ashx>

Workforce Singapore (WSG). (2023, April 19). Retraining singaporean pmets aged 40-plus - Why and how?. MyCareersFuture. <https://content.mycareersfuture.gov.sg/retraining-singaporean-pmets-aged-40-plus/>

Yeo, W. L. (2023, January 16). NTUC: The New Social Compact and the policy implications for work. [lkyspp.nus.edu.sg](https://lkyspp.nus.edu.sg). <https://lkyspp.nus.edu.sg/docs/default-source/ips/sp2023-presentation-ms-yeo-wan-ling.pdf>

Yoon, J. (2015). Labor market outcomes for women in East Asia. *Asian Journal of Women’s Studies*, 21(4), 384–408. <https://doi.org/10.1080/12259276.2015.1106861>

Zacher, & Griffin, B. (2015). Work, aging, and retirement in Australia: Introduction to the special issue. *Work, Aging and Retirement*, 1(2), 129–132. <https://doi.org/10.1093/workar/wau011>

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