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## WORK CAPACITY OF OLDER ADULTS IN HONG KONG

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### Abstract

Hong Kong is facing a serious ageing issue. Apart from that, Hong Kong is facing a shrinking labor force as the number of people in the labor force has been falling since 2018. The ageing population and shrinking labor force have stimulated the discussion on the age threshold of eligible older adults to receive retirement benefits and/or old age allowances. The impact of any policy change may depend on the health and the work capacity of the people aged around 65. Nonetheless, research on the work capacity of older adults in Hong Kong is lacking. In this study, we attempted to estimate the work capacity of older adults in Hong Kong based on the mortality rate. It was found that there is substantial untapped work capacity of older adults in Hong Kong, with a potential gain in work capacity of 3.898 years. The results of this study shed light on the making of old-age policies. With the rapid ageing population and shrinking labor force in Hong Kong, it is timely to explore if the society could further utilize the work capacity of older adults. More research on the work capacity and health of the elderly is needed.

**Keywords:** Work Capacity, Aging Population, Hong Kong

**JEL Classifications:** J14, J21, J22

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### 1. Introduction

Population ageing has been a serious issue in Hong Kong. Both the proportion and number of elderlies in Hong Kong are growing rapidly. According to "Hong Kong Population Projections 2020-2069" (Census and Statistics Department, 2020), it is projected that the number of elderly people aged 65 and over will jump from 1.32 million (around 18.4 percent of the total population) in 2019 to 2.52 million (around 33.3 percent of the total population) in 2039. With the rapidly ageing population, the elderly dependency ratio, defined as the number of persons aged 65 and over per 1000 persons between 15 and 64, is projected to rise from 249 in 2019 to 508 in 2039. Apart from the rapidly ageing population, Hong Kong is going through a shrinking labor force in recent years. The number of people in the labor force peaked at almost 4 million in 2018. The figure dropped after that because of different factors such as the Covid pandemic and the resulting economic downturn. The most recent figure was 3.776 million in 2022. With the ageing population

and the shrinking labor force, one of the possible solutions is to enhance labor force participation of older adults.

The Government of the Hong Kong Special Administrative Region have implemented some policies to enhance labor force participation of older adults. For example, in November 2005, the new retirement age of 65 for civilian staff and at 60 for disciplined services staff have been announced. It also introduced the Post-retirement Service Contract (PRSC) scheme to allow more flexibility to extend the service of civil servants upon their retirement. Some public bodies, such as the Hospital Authority, follow the PRSC scheme. Hong Kong Labor Department has launched the employment program for the elderly. It offers an on-the-job training allowance of up to HKD4,000 per month per employee for six to twelve months to employers engaging unemployed elderly job seekers aged 60 or above. The government has also launched several transport fare subsidies which facilitate geographical mobility of elderly for work. The enhanced version of Working Family Allowance applied to working elders has been launched in 2018 to encourage self-reliance through employment. The ageing population issue has also stimulated the discussion on the age of eligibility for retirement benefits or old age allowances.

Consider the ageing population and the shrinking labor force in Hong Kong, it is of urgent need to explore if the society could further utilize the experience and skills of the older adults. However, Hong Kong has not done enough research on this issue. To our knowledge, we are the first to explore the potential work capacity of older adults in Hong Kong. We used the method suggested by Milligan and Wise (2015) for which work capacity is estimated by using people's mortality rate. For our estimation, we used the data from Census and Statistics Department of Hong Kong.

This paper is structured as follows: the next section is a review of literature related to work capacity and Hong Kong labor market of older adults. The ensuing section describes different trends in Hong Kong and its labor market. After that, the section shows the estimation of work capacity in Hong Kong. The final section concludes.

## 2. Literature review

World Health Organization (WHO) (1993) recommended employers and regulatory agencies to emphasize work capacity, not age, to be the criterion for recruitment and retaining of employees. WHO also suggested employers maintain sufficient flexibility in job design and work environment to ensure appropriate working conditions for the heterogeneous older population.

Two approaches have been proposed to estimate the work capacity of older adults. The first approach was proposed by Cutler *et al.* (2013). They estimated work capacity of older adults using their health status. They calculated how much more the older adults with a given level of health could work by comparing them with the younger counterparts with a similar level of health. The second approach was proposed by Milligan and Wise (2015), who estimated work capacity of older adults using their mortality rate. They calculated how much more the older adults with a given mortality rate nowadays could work by comparing them with the people with a similar mortality rate in the past. As suggested by Milligan and Wise (2015), mortality rate is strongly related to self-assessed health and other health indexes. At the same time, mortality rate is an objective measure, enabling comparison across different countries and different time points. These properties allow the mortality rate to serve as a proxy indicator of health.

As summarized by Milligan and Wise (2015), mortality rate has been declining in many developed countries. Researchers like Gleib *et al.* (2010) have summarized this trend. Other scholars have also looked at the change in mortality rate and the causes behind this trend, such as the work by Crimmins and Beltran-Sanchez (2011), Cutler *et al.* (2006) as well as Soares (2007). Milligan and Wise (2015) has also summarized the decline in employment rate for older adults in the developed countries. Studies like Gruber and Wise (1999), Gruber and Wise (2004), Gruber and Wise (2007) were some of the research mentioned by Milligan and Wise (2015) that examined the declining employment rate of older workers.

Oshio and Shimizutani (2019) examined the elderly health-based capacity to work by using microdata released by the Ministry of Healthy, Labor and Welfare of the Japanese Government. They adopted the method by Cutler *et al.* (2013). Using multinomial logistic

regression analysis, their results showed that there existed a large additional work capacity among the elderly in Japan. Moreover, among elderly males, there was the possibility of some shift from part time to full time jobs.

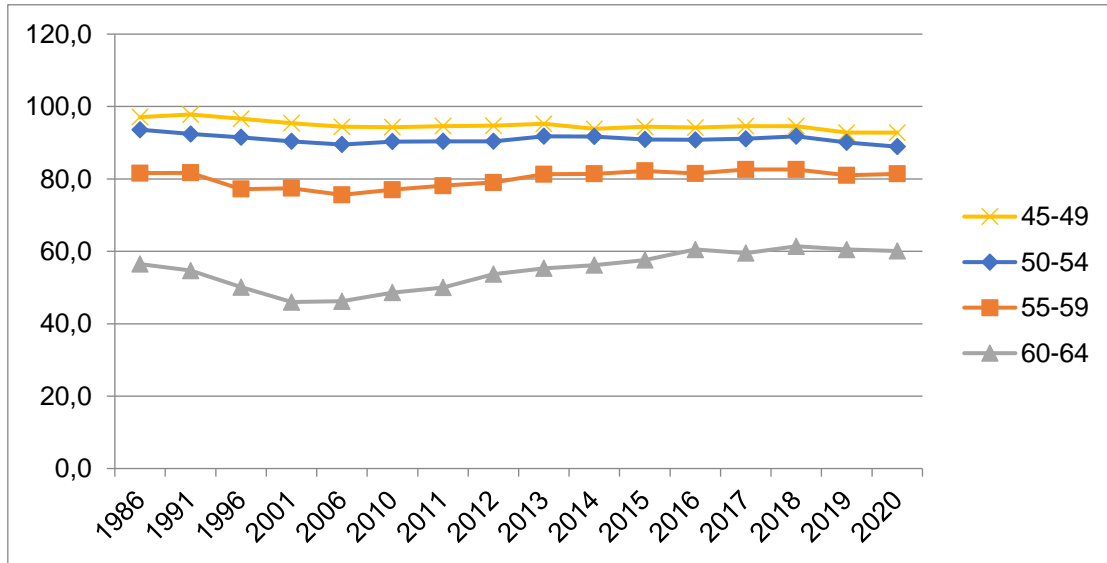
Milligan and Wise (2015) assessed the work capacity of elderly across twelve OECD countries using mortality rate. They found that the employment rate of elderly varied substantially across countries for a given level of mortality over time. Subsequent studies have adopted the method by Milligan and Wise (2015) to estimate the work capacity in different countries. Usui *et al.* (2017) estimated the work capacity in Japan and found that the additional years of work was around 3.7 years. De Souza *et al.* (2019) estimated the work capacity in Latin American countries and found substantial differences between countries in Latin America with the additional years of work ranging from 0.461 to 4.842 years.

Research on the work capacity of older adults has been conducted in other countries. Nonetheless, research on this issue is lacking in Hong Kong. Studies on the work capacity of older workers in China may offer some insight on work capacity in Hong Kong. A study by Hou *et al.* (2021) used the older adults in rural area as a benchmark to estimate the work capacity for older adults in urban area of China. They found that among older adults in urban area, an additional 31 million workers could be added to the labor force, reflecting a substantial work capacity of older adults in China. Another study by Mao *et al.* (2022), using both the methods proposed by Milligan and Wise (2015) and Cutler *et al.* (2013) found that substantial work capacity of older adults in China existed. Mao *et al.* (2022) also found that work capacity is related to education level and health status of the workers. Zhan *et al.* (2022) also found the existence of substantial work capacity in China, especially in urban areas.

Some studies investigated issues related to older workers in Hong Kong. Chan and Yip (2019) conducted a study about elderly labor force participation in Hong Kong. They found that Hong Kong's elderly labor force participation rate soared over the past decade. They also found that the rate could have room to increase further. They suggested a multi-pronged approach to promote elderly employment. For instance, strengthening incentives, tackling barriers on the side of employers and improving elders' employability, could promote employment for elderly. Higgins and Vyas (2018) compared the employment of older workers in Hong Kong and Singapore. They claimed that the relatively more extensive welfare and wage growth in Hong Kong might contribute to the lower labor force participation rate in Hong Kong.

### 3. Trends in Hong Kong

Figure 1 shows the labor force participation rate of older men in Hong Kong. Because of data availability, we could only find the statistics for selected years from 1986 to 2020. We focused on men aged 45 to 64. For men in the age groups 45 to 49 and 50 to 54, the labor force participation rate has been relatively stable. Though, compared to the figures in the 80's, both age groups showed a slight decline in the labor force participation rate. For the age group 45 to 49, the rate fell from 97.1 percent in 1986 to 92.8 percent in 2020. For the age group 50 to 54, the rate fell from 93.6 percent in 1986 to 88.9 percent in 2020.

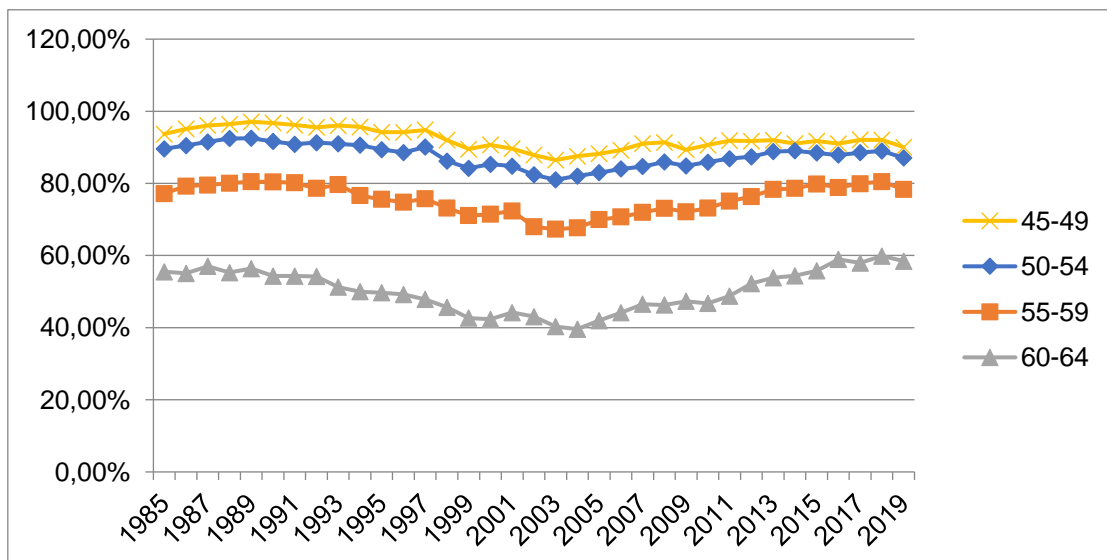


**Figure 1. Males' labor force participation rate by age group, 1986-2020**

Source: Calculation using data from Census and Statistics Department of HKSAR (2020)

For older men aged 55 to 64, the trend was quite different from their younger counterparts. For men in the age groups 55 to 59 and 60 to 64, the labor force participation rate declined until the early 2000's. For the age group 55 to 59, the rate fell from 81.6 percent in 1986 to 75.6 percent in 2006. For the age group 60 to 64, the rate fell from 56.5 percent in 1986 to 46 percent in 2001. From their respective historical lows, the rate has increased significantly. For the age group 55 to 59, the rate rose to 81.4 percent in 2020. For the age group 60 to 64, the rate rose to 60.1 percent in 2020, a 14-percentage points' jump from the rate in 2001.

Figure 2 shows the employment rate of older men in Hong Kong. Again, we focused on men aged 45 to 64. For men in the age groups 45 to 49 and 50 to 54, similar to the case of labor force participation rate, the employment rate has been relatively stable. Compared to the all-time high in the early 90's, both age groups showed a small decrease in the employment rate. For the age group 45 to 49, the rate fell from 96.2 percent in 1991 to 90.1 percent in 2019. For the age group 50 to 54, the rate fell from 90.86 percent in 1991 to 87.1 percent in 2019.

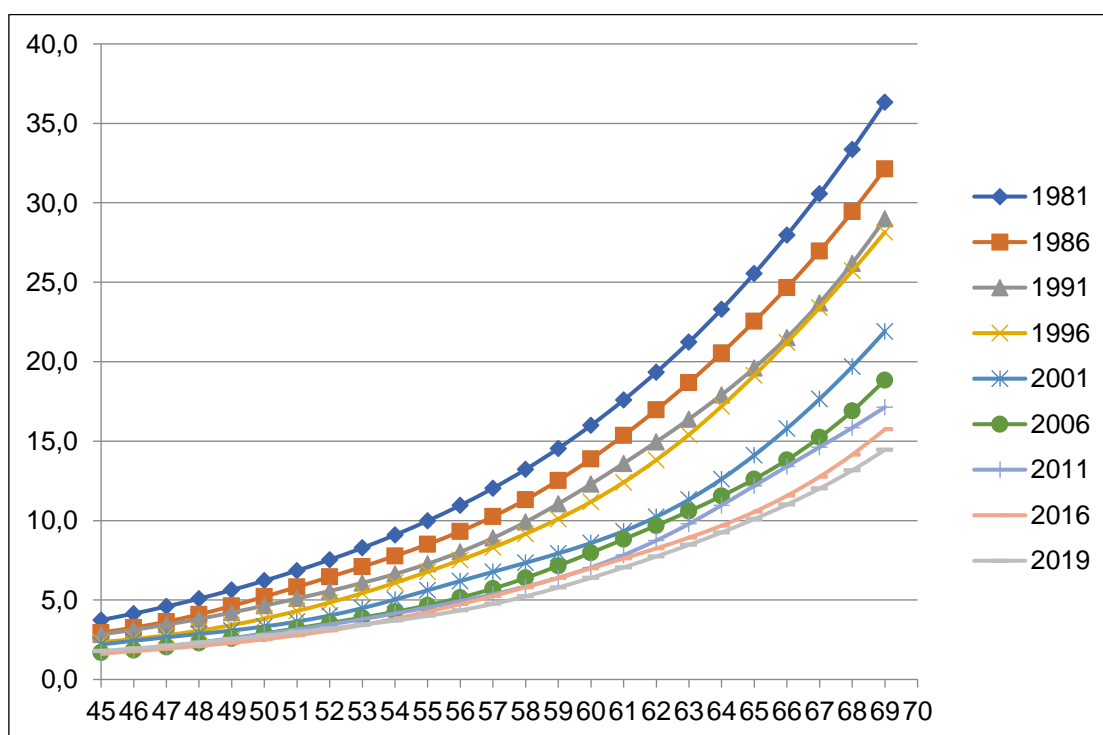


**Figure 2. Males' employment rate by age group, 1985-2019**

Source: Calculation using data from Census and Statistics Department of HKSAR (2020)

For men aged 55 to 64, the trend again was like the case of labor force participation rate. For men in the age groups 55 to 59 and 60 to 64, the employment rate showed a downward trend from the 80's to the early 2000's. For the age group 55 to 59, the rate fell from 79.3 percent in 1986 to 67.3 percent in 2003. For the age group 60 to 64, the rate fell from 55.1 percent in 1986 to 39.6 percent in 2004. From their respective historical lows, the rate has increased significantly. For the age group 55 to 59, the rate rose to 78.3 percent in 2019. For the age group 60 to 64, the rate rose to 58.5 percent in 2019, a 19-percentage points' jump from the rate in 2004.

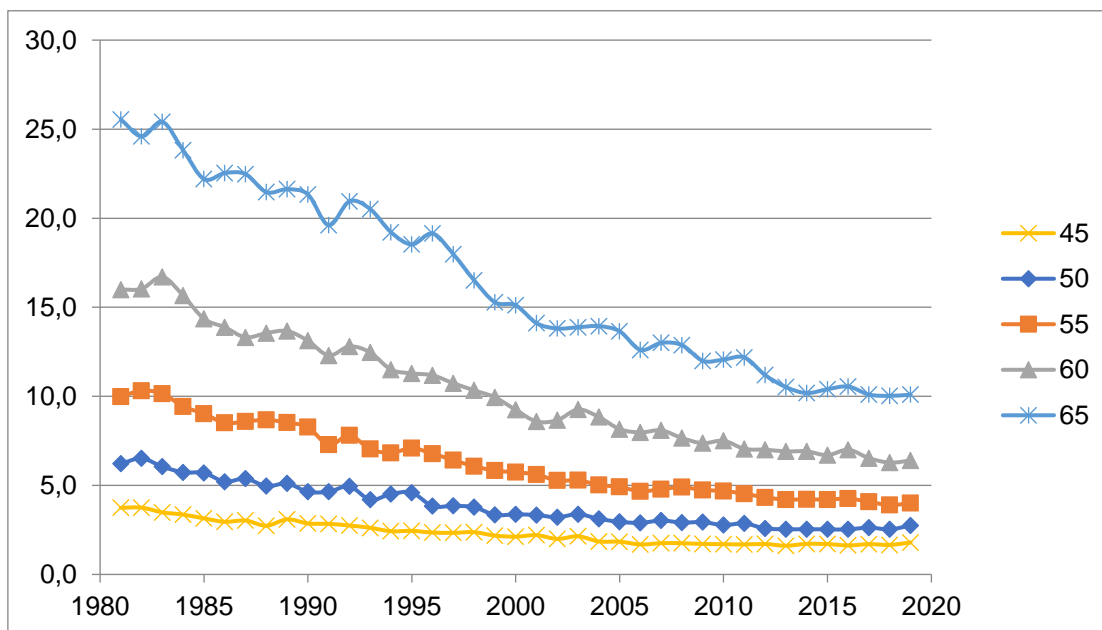
Figure 3 shows the mortality rate of men aged 45 to 69 for selected years. The mortality rate was positively correlated with the age of the people, i.e., the age gradient in mortality rate. For example, the mortality rate of men aged 65 was consistently four times higher than the rate of men aged 50. The figure also showed significant declines in mortality rates at all ages over the years, represented by the lower curves in subsequent years.



**Figure 3. Mortality rates for males aged 45-69, 1981-2019**

Source: Calculation using data from Census and Statistics Department of HKSAR (2020)

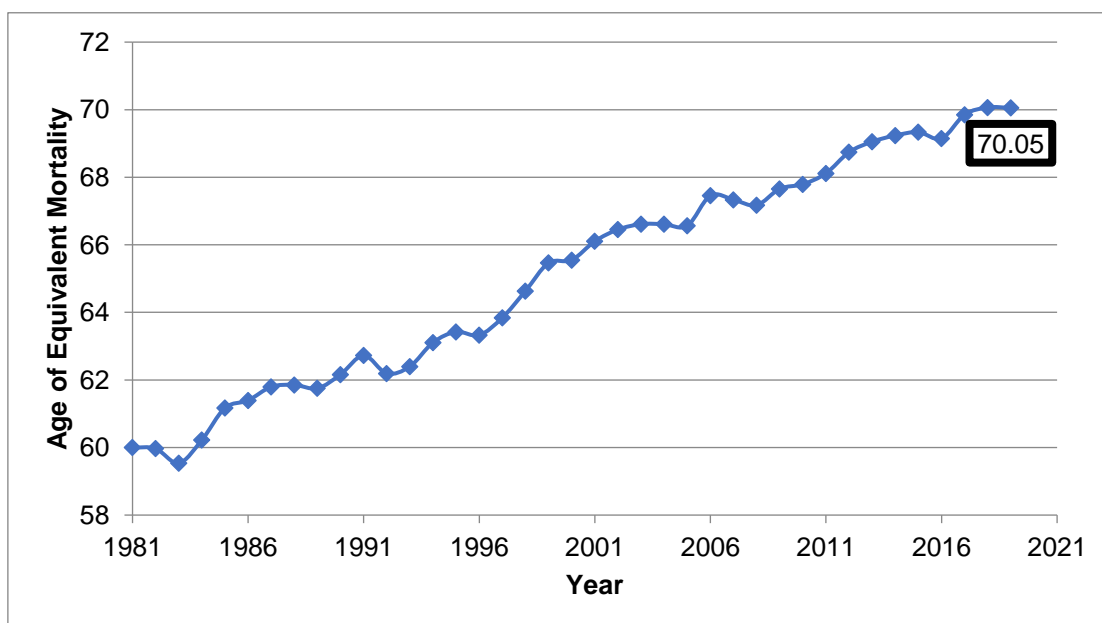
Another graphical presentation of these statistics is shown in Figure 4. All five curves are downward sloping curves of mortality rate over the years. For example, for men aged 60, the rate dropped from 15.99 in 1981 to 6.39 in 2019, a drop of 60 percent. Similar trends were found for all ages.



**Figure 4. Males' age specific mortality rates, 1981-2016**

Source: Calculation using data from Census and Statistics Department of HKSAR (2020)

Another way to show the improvement of people's health in terms of declining mortality rate is to calculate the mortality equivalent ages over time. For example, the mortality rate at age 60 in 1981 was 15.99. Next, we calculated the age at which this mortality rate occurred in all the other years from 1982 to 2019. Figure 5 shows the mortality equivalent ages over time. The increasing mortality equivalent ages can be seen in the graph. The mortality rate at age 60 in 1981 was reached at older men in almost all subsequent years. In 2019, the mortality rate at age 60 in 1981 was attained at age 70.05. This mortality-equivalent age difference of 10.05 years represents a 16.75 percent in age gain. It means a man aged 70.05 in 2019 is the same as a man aged 60 in 1981 in terms of mortality rate.



**Figure 5. Mortality equivalent ages for males**

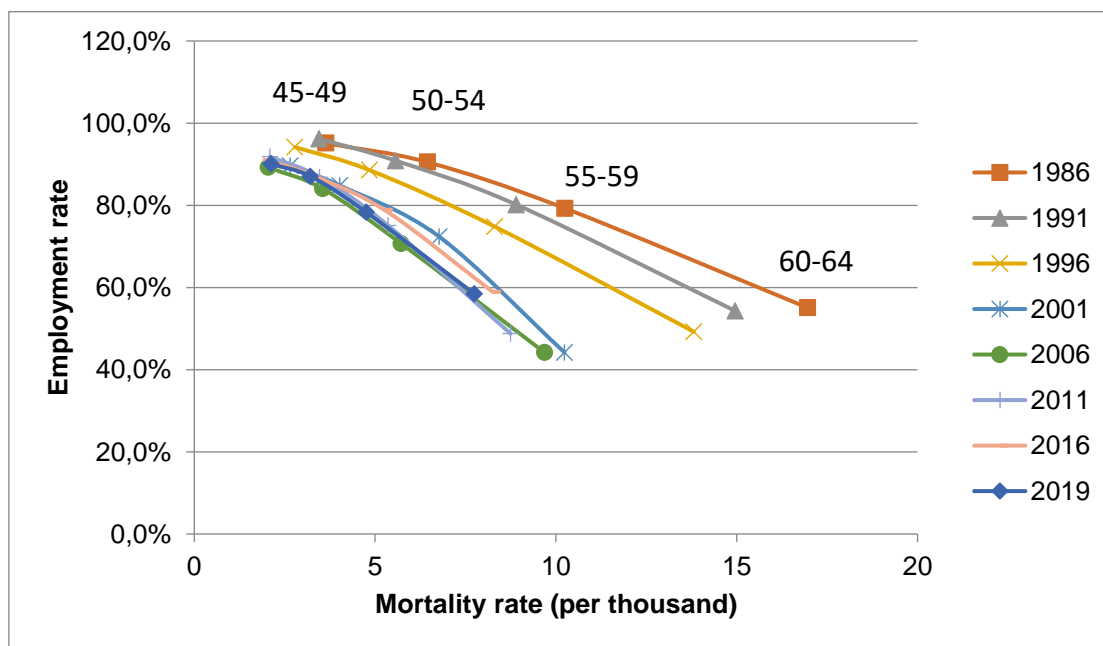
Source: Calculation using data from Census and Statistics Department of HKSAR (2020)

#### 4. Estimating work capacity in Hong Kong

We used the methodology developed by Milligan and Wise (2015) to estimate the work capacity in Hong Kong. Milligan and Wise (2015) suggested that mortality rate could be used as an indicator of health such that the mortality rate could be used to estimate the capacity to work by older adults. Following their method, we first developed the relationship between mortality rate and employment rate in different years. After that, we estimated the ability to work for older adults at present by comparing the relationship between mortality and employment at present to the corresponding relationship in the past. The data source used in the analysis came from the Census and Statistics Department of the HKSAR. The data covered the years from 1985 to 2019. These are the years that we have data on both the employment rate and mortality rate.

Figure 6 shows the relationship between employment rate and mortality rate in selected years. Because of the data availability, we could only show the relationship between the two rates for several age groups. The age groups are 45-49, 50-54, 55-59, and 60-64. Following the curve of a particular year, a clear negative relationship between employment rate and mortality rate can be seen. This negative sloped curve means that when a person becomes older, the mortality rate will be higher and the employment rate will be lower.

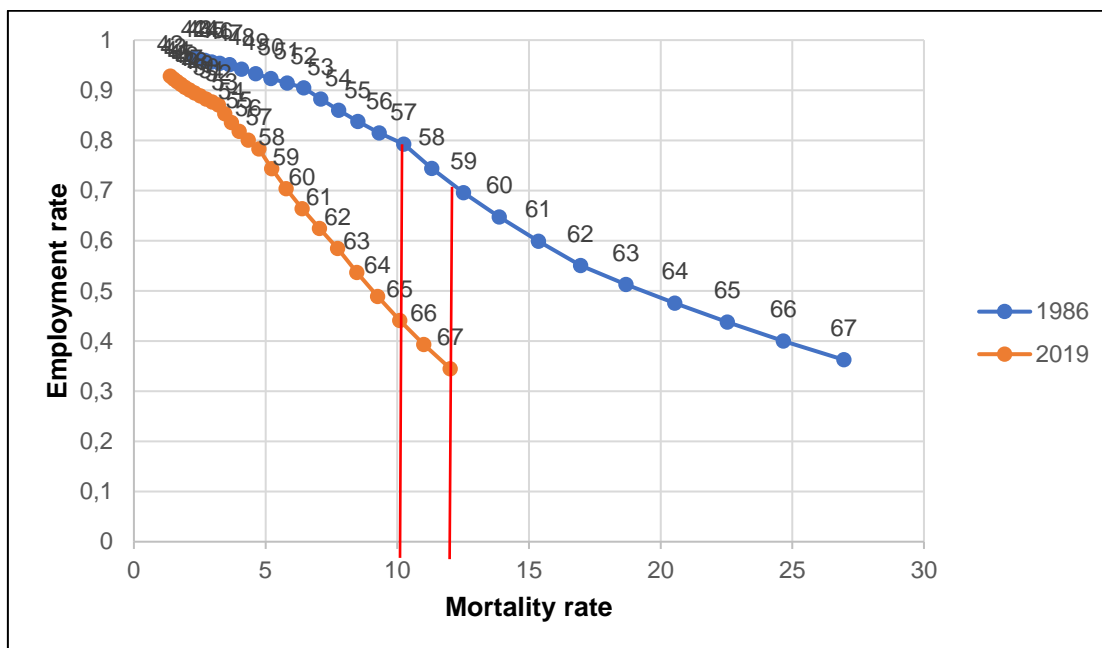
Figure 6 also shows the comparison between curves from different years. The curves of more recent years lie below the curves of older years. For example, the 1986 curve is the highest among all the curves in the graph. It means that the men in 1986 had higher employment rate than the men in, say 2019, given that they had similar mortality rate.



**Figure 6. Employment rate and mortality rate, 1986-2019**

Source: Calculation using data from Census and Statistics Department of HKSAR (2020)

Figure 7 compares specifically the change of employment rate and mortality rate of 1986 and 2019. At younger age, about 56 or below, employment rate was above 0.8 in both years and with a relatively low mortality rate, below 10 in 1986 and below 4 in 2019. After that, the two curves begin to diverge, and the difference becomes increasingly large due to more people choosing retirement and the improving mortality rate in 2019.



**Figure 7. Employment rate by mortality rate, 1986 and 2019**

**Source:** Calculation using data from Census and Statistics Department of HKSAR (2020)

For example, the employment rate was around 0.7 at age 59 in 1986, when the mortality rate was around 12.5. In 2019, a similar level of mortality rate occurred at age 67. The corresponding employment rate was 0.34, a significant difference of 36 percentage points from the employment rate in 1986. Similar patterns could be found at lower mortality rates. For example, when the mortality rate was around 10, the employment rate was 0.8 in 1986 and around 0.44 in 2019, a difference of 36 percentage points.

**Table 1. Calculation of work capacity, comparison between 1986 and 2019**

Age	Mortality rate	Actual Employment Rate	Expected Employment Rate	Difference in Employment Rate	Total Gain in Work Capacity
48	2.312	0.895	0.964	0.070	0.070
49	2.526	0.889	0.962	0.073	0.143
50	2.750	0.883	0.959	0.076	0.219
51	2.978	0.877	0.956	0.080	0.299
52	3.210	0.871	0.954	0.084	0.383
53	3.450	0.865	0.953	0.099	0.482
54	3.709	0.859	0.950	0.114	0.596
55	4.003	0.853	0.944	0.126	0.722
56	4.347	0.847	0.938	0.137	0.859
57	4.755	0.841	0.931	0.148	1.007
58	5.234	0.835	0.923	0.180	1.186
59	5.786	0.829	0.915	0.211	1.397
60	6.396	0.823	0.906	0.242	1.639
61	7.051	0.817	0.884	0.260	1.899
62	7.740	0.811	0.861	0.276	2.175
63	8.471	0.805	0.839	0.302	2.477
64	9.254	0.799	0.817	0.328	2.805
65	10.094	0.793	0.796	0.356	3.161
66	11.006	0.787	0.758	0.365	3.526
67	12.018	0.781	0.716	0.371	3.898

**Source:** Calculation using data from Census and Statistics Department of HKSAR (2020)



Measured by mortality rate, the data seems to point out that there was an increase in work capacity of older adults. Next, we performed a counterfactual calculation to estimate potential gain in employment given the improved mortality rate. The calculation was proposed by Milligan and Wise (2015) and our estimation results were shown in Table 1. The year 1986 was chosen as the benchmark year. The year 2019 was chosen as the targeted year to perform the calculation. For each age of the year 2019, the mortality rate and the employment rate were observed. For the mortality rate of the year 2019, we then found the corresponding employment rate of the benchmark year. For example, at age 48 in 2019, the mortality rate was 2.31 and the employment rate was 0.895. In 1986, the employment rate at the mortality rate of 2.31 would be approximately 0.964, calculated by interpolating the employment rate between ages 42 and 43. Thus, there was a difference of 0.070 between the employment rate in 2019 and the employment rate in 1986. This difference could be interpreted that on average, people worked 0.070 fewer years in 2019 than in 1986 when the mortality rate was 2.31. The last column of Table 1 – total gain in work capacity is a cumulative difference in employment rate. We repeated the calculation for ages 48 to 67. The results showed that if people in 2019 worked as much as those with the same mortality rates in 1986, the total gain in work capacity was 3.898 years of work. The number of years worked for age 48 to 67 in 2019 was 14.028. The total gain in work capacity represented 27.8 percent of the actual years worked in 2019.

The additional years of work of 3.898 was very close to the numbers found in studies of some developed countries. For example, Milligan and Wise (2015) found that the additional years of work in the US was around 3.709. Usui *et al.* (2017) found that the additional years of work in Japan was around 3.7. Nonetheless, other studies showed that the additional years of work could have vast differences among different countries. For example, De Souza *et al.* (2019) estimated the work capacity in Latin American countries and found that the additional years of work ranging from 0.461 (Argentina) to 4.842 (Costa Rica).

## 5. Conclusion

The main objective of this study is to estimate the work capacity of older adults in Hong Kong, using the method developed by Milligan and Wise (2015). The ability of older adults to work at present was estimated by comparing the relationship between employment rate and mortality rate at present to the corresponding relationship in the past.

Decreasing mortality rate for older adults has been observed in Hong Kong, reflecting the general improvement in people's health. However, the improvement in health has not been transformed into employment rate increase for older workers. Our calculations showed that if men aged 48 to 67 in 2019 worked as much as those with the same mortality rates in 1986, they would have worked 3.898 more years, a 27.8 percent increase.

Hong Kong is currently facing a shrinking labor force and an ageing population. It is important to explore different solutions to deal with these issues. With data showing a potential work capacity of older adults, the Hong Kong government should consider new policies to further utilize the experience and skills of the older adults. Policies like subsidizing firms that hire older adults or hiring older adults as part-time civil servants could be something that the Hong Kong government could further explore.

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