

## **ABOUT MORTALITY DATA FOR HONG KONG, CHINA**

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### **GENERAL**

Aside from the Japanese occupation during World War II, Hong Kong was under British rule from 1842 to 1997 (155 years). Sovereignty over Hong Kong was returned to the People's Republic of China on July 1, 1997. Since then, Hong Kong is a Special Administrative Region (SAR) of China under the "one country, two systems" principle (Hong Kong SAR Government, 2019).

The Census and Statistics Department (C&SD) was officially established in 1967 and currently remains the principal agency in charge of population and vital statistics for Hong Kong.

Results from the earliest recorded population count in Hong Kong were published May 15, 1841, by the Hong Kong Government Gazette, an official publication of the Government of Hong Kong established during the colonial times that remains in publication today. Numerous censuses were conducted in the early twentieth century, although variations over time in completeness contributed to fluctuations in the population counts. Up to the 1970s, Hong Kong's population was affected not only by births and deaths, but also by heavy immigration owing to unstable political conditions in Mainland China. However, as pointed out by Mok (1962, p. 4): "no census was taken between 1931 and 1961. A calculation based on 1931 figures would be of little use."

Prior to 1961, government officials did not prepare population projections and estimate life tables because the data were not considered sufficiently accurate and because the population of Hong Kong was highly fluid prior to the Pacific war. Large numbers of young men came to the Colony, mainly from the Kwangtung province, leaving their families behind. Barnett K. M. A., Commissioner of Census and Statistical Planning (Hong Kong Census, 1963, pp. iii) mentioned that "the presence of this large transitory element in the population made it impossible to prepare calculations which would give a useful comparison of Hong Kong's mortality and fertility experience with that of settled communities elsewhere."

After a 30-year lapse owing to wars and unstable events, the first modern population census of Hong Kong was conducted in February-March 1961; the results were published in a three-volume report that appeared in July 1962 (Hong Kong Census, 1963). Since 1961, censuses have been conducted on a decennial basis and "by-censuses" have been conducted on a sample basis midway between the decennial censuses (i.e., 1966, 1976, 1986, 1996, 2006, 2016).

The HMD mortality series for Hong Kong covers the period since 1986. Although mortality and population data are available prior to 1986, the C&SD does not recommend extending the HMD mortality series further back in time because there may be additional data quality issues for those early data (Dr. Wong, personal communication, October 11, 2019).

## **Source of Data**

For the HMD, we use official population estimates, death counts, and birth counts provided by C&SD. (See Appendix 1 for more details.) Aggregate-level population and vital statistics are disseminated via the C&SD website (<https://www.censtatd.gov.hk/home/index.jsp>).

## **Specific Episodes in Hong Kong's Demographic History**

The demographic transition proceeded at a rapid pace in Hong Kong, with the total fertility rate falling from about 5 in 1960 to close to 1 in 2017 (one of the lowest levels in the world; Census and Statistics Department, 2018a) and life expectancy at birth ( $e_0$ ) increasing by more than 14 years between 1961 and 2002 ( $e_0=78.6$  for men and 84.5 for women) (Cheung et al., 2005). By 2023, after a rebound following the impact of the COVID-19 pandemic,  $e_0$  reached 82.5 years for men and 87.9 years for women, one of the highest values in the world (Census and Statistics Department, 2024).

### **Population Growth and Migration, 1961-1971**

Since 1961, birth and death registration in Hong Kong are regarded as very accurate. In contrast, the figures for migration—as compiled from the best sources available with the help of the Director of Immigration and the Commissioner of Registration of Persons (Mok, 1962)—are considered less accurate. Mok (1986, p. 11) concluded that “the figure 80,000 is used as the annual net gain by migration for the high projection in the period mid-year 1962 to mid-year 1971. The figures of 50,000 and 20,000 are used for the medium and low projections respectively during the same period, except 1962 for which a net gain of 122,000 has been assumed.” During 1961-71, Hong Kong experienced fast population growth (2.3% average annual growth rate), primarily because of the effect of baby boomers (Census and Statistics Department, 2012).

### **Population Growth and Migration, 1971-1981**

Population growth continued at a steady pace between 1971 and 1976, but accelerated in 1976-1981 (3.3% average annual growth) because of heavy immigration from Mainland China prior to the abolition of the touch-base policy<sup>1</sup> (Census and Statistics Department, 2012). Many of these immigrants were aged 15-44 and thus, the population in this age range grew from 2.02 million in 1971 to 2.51 million in 1981 (Census and Statistics Department, 2012).

### **Population Growth and Migration, 1981-1991**

During 1981-1991, immigrants came from the Mainland through the one-way permit (OWP) scheme; many of these entrants were spouses and children of immigrants from the Mainland who entered Hong Kong before the abolition of the touch-base policy (Census and Statistics Department, 2012). However, population growth was low from the mid-1980s to the early 1990s (e.g., 0.3% in 1990) because of a large outflow of emigrants (Census and Statistics Department, 2017a, paragraph 2.1).

### **Population Growth and Migration, 1991-2001**

The number of OWP holders and foreign domestic helpers (FDHs) coming to Hong Kong continued to increase during 1991-2001 (Census and Statistics Department, 2012). Most of the OWP holders were spouses of Hong Kong residents and their children, which partially offset the

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<sup>1</sup> Under the touch-base policy (November 1974-October 1980), illegal immigrants from the mainland who evaded capture and “reached base” (i.e., found proper accommodations with relatives or otherwise) were permitted to stay in Hong Kong.

drop in the population below age 15 resulting from fertility decline. FHDs were predominately female, thus reducing the sex ratio of male to females.

Population growth increased somewhat between 1991 and 1996 (1.8%) as people from Hong Kong who had migrated overseas earlier began to return to Hong Kong for economic reasons or to reunite with family (Census and Statistics Department, 2012). Since Hong Kong reverted to Chinese rule in 1997, population growth has remained at a low level.

### **Population Growth and Migration, 2001-2023**

Low fertility during 2001-2011 resulted in slow population growth (0.4% in 2001-2006, 0.6% in 2006-11). In 2003, Hong Kong experienced population decrease (-0.2%), possibly as a result of the outbreak of Severe Acute Respiratory Syndrome (SARS) (Census and Statistics Department, 2017a, paragraph 2.1). Between February 15 and May 31, 2003, 1,755 people in Hong Kong were infected with SARS and 299 died (Benitez, 2003; Leung et al., 2009). In 2020-2022 there has been an outflow of more than 100,000 residents. During the period from mid-2021 to mid-2022 the annual population growth was -0.9%<sup>2</sup>. 53,000 usual residents and One-Way Permit holders have entered the territory of Hong Kong in 2023.

### **Population Aging and Sex Ratios, 1986-2023**

Given low fertility and low mortality, Hong Kong experienced population aging during the period covered by the HMD series: the percentage of the population below age 15 declined from 23.1% in 1986 to 11.3% in 2016, while the percentage aged 65 and older increased from 7.7% in 1986 to 15.9% in 2016 and to 21.8% in 2023, respectively (Census and Statistics Department, 2017a, Table 2.2; Census and Statistics Department 2024, Table 3.2). The large inflows of OWP holders and FDHs reduced the male/female sex ratio from 1.062 in 1986 to 0.852 in 2016 and to 0.838 in 2023 (Census and Statistics Department, 2017a, Table 2.4; Census and Statistics Department 2024, Table 3.1).

## **TERRITORIAL COVERAGE**

There have been no territorial changes since 1898.

## **POPULATION COUNT DATA**

### ***Coverage and Completeness***

Population estimates are updated by C&SD on a half-yearly basis, reflecting the mid-year and year-end demographic situations. Prior to August 2000, population estimates were compiled using the **extended *de facto* approach**. Like all *de facto* population counts, it covers all persons present at the reference date (i.e., permanent residents, non-permanent residents, and visitors). However, it is "extended" in the respect that a Hong Kong Permanent Resident is still counted as part of the Hong Kong population if, at the reference date, he/she is not in Hong Kong but temporarily in the Mainland of China or Macao (Census and Statistics Department, 2018b).

Since August 2000, the **resident population** approach has been adopted in place of the extended *de facto* approach. C&SD has recompiled the population estimates for the period 1996-2000 to represent the resident population. This shift in population coverage reflects the

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<sup>2</sup> [https://www.censtatd.gov.hk/en/press\\_release\\_detail.html?id=5199](https://www.censtatd.gov.hk/en/press_release_detail.html?id=5199)

view that, from a statistical theory standpoint, the **resident population** concept is more relevant for measuring the population size of a place. In particular, this approach better accounts for the current residency and mobility patterns of the Hong Kong population. [For more details about the methodology for compiling population estimates for Hong Kong, see Census and Statistics Department (2002).]

Under the **resident population** approach, the "Hong Kong Resident Population" comprises both "*Usual Residents*" and "*Mobile Residents*". "*Usual residents*" refer to two categories of people: (a) Hong Kong Permanent Residents who have stayed in Hong Kong for at least 3 months during the 6 months before or for at least 3 months during the 6 months after the reference date, regardless of whether or not they are present in Hong Kong at the reference date; and (b) Hong Kong Non-permanent Residents who are present in Hong Kong at the reference date. Hong Kong Permanent Residents who are not "*Usual Residents*" are classified as "*Mobile Residents*" if they have stayed in Hong Kong for at least 1 month but less than 3 months during the 6 months before or for at least 1 month but less than 3 months during the 6 months after the reference date, regardless of whether or not they are in Hong Kong at the reference date (Census and Statistics Department, 2018b).

Similarly, population censuses/by-censuses have represented the "Hong Kong Resident Population" enumerated under the *resident population* approach since the 2001 census. The 1996 Population By-census originally referred to the resident population enumerated under the *de jure enumeration* approach<sup>3</sup>, but the census counts were recompiled based on the *resident population* approach in August 2000. The 1991 Population Census and earlier censuses/by-censuses referred to the population enumerated under the *de facto enumeration* approach.<sup>4</sup>

The reference date for population censuses/by-censuses also varied over time. For example, the 2001 Population Census was conducted in mid-March; the 2006 Population By-census was taken in mid-July; and the 2011 Population Census and the 2016 Population By-census occurred at the end of June. 2021 Population Census took place over the span of 2 months covering June, July, and August (to represent population as of June 30, 2021).

Given the long history of census-taking in Hong Kong, recent censuses are nearly complete, and age reporting is reasonably good. In Hong Kong, independent estimates of completeness are available from Post Enumeration Surveys that were conducted shortly after each census. For the censuses/by-census conducted between 1971 and 1996, the degree of over- or under-enumeration was within  $\pm 1\%$  (see Table 1).

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<sup>3</sup> The resident population in the 1996 Population By-census covered members of household usually living in Hong Kong in the 6-month period either before or after the reference moment, and those who usually worked in the mainland of China/ Macao. Under the *de jure* enumeration approach, all members of the household were enumerated in the quarters where they usually resided at the reference date (March 15, 1996).

<sup>4</sup> The 1991 Population Census and earlier censuses/by-censuses enumerated all persons who were present in Hong Kong at the reference date plus Hong Kong residents who were temporarily away from Hong Kong. Thus, census reports published population counts for both the *de facto* and the resident population. However, detailed questions on demographic and socioeconomic characteristics were only asked of those present in Hong Kong at the reference moment (i.e., *de facto* population). Thus, detailed data were compiled only for the *de facto* population.

**Table 1. Over-enumeration and under-enumeration rates from Post Enumeration Surveys, 1971-2021**

| Year of census/by-census | Over-enumeration (+) / under-enumeration (-) rate   |
|--------------------------|---|
| 1971                     | -1.0%<br>Source: Section 11.5C of Hong Kong Population and Housing Census 1971 Technical Report   |
| 1976                     | -0.4%<br>Source: Section 18 of Ch. II of Hong Kong By-census 1976 Main Report Volume 1: Analysis  |
| 1981                     | < -0.1% for population in omitted living quarters;<br>+0.1% for population in enumerated living quarters<br>Source: P.107-109 of Hong Kong 1981 Census Main Report Volume 1: Analysis |
| 1986                     | -0.6%<br>Source: P.87 of Hong Kong 1986 By-census Main Report Volume 1  |
| 1991                     | < -0.5%<br>Source: P.168 of Hong Kong 1991 Population Census Main Report  |
| 1996                     | Close to 0.0%<br>Source: P.178 of 1996 Population By-census Main Report   |
| 2001                     | Very small<br>(C&SD no longer publishes the exact discrepancy rate)   |
| 2006                     |   |
| 2011                     |   |
| 2016                     |   |
| 2021                     |   |

### **Age Misreporting**

Many decades ago, age reporting in Hong Kong was affected by the Chinese method of reckoning age and calendar. A Chinese baby is counted as one-year-old at birth. S/he becomes two on the next Chinese New Year's Day. Thus, errors may result from the conversion of age to the Western method of measuring age. Direct collection of birth date can also be problematic as most older Chinese do not know their date of birth, although they may know their zodiac animals and birthdays on the Lunar (Chinese) calendar, which does not completely align with the Gregorian calendar generally used today. Officials at C&SD note that such problems are likely to affect only very old cohorts and thus, has not been a major concern in recent decades. A previous study of 147 Hong Kong near centenarians and centenarians found 33 individuals (22%; 6 males and 27 females) who self-reported their age as one year older (following the traditional Chinese method of counting age) than their age based on the Western method of counting (Lau and Cheung, 2016). This same issue is likely to apply to the HMD data for Taiwan and South Korea.

## **DEATH COUNT DATA**

### **Coverage and Completeness**

Death counts represent the *de facto* population (i.e., includes all deaths that occur in Hong Kong, regardless of the decedent's country of residence or their length of stay in Hong Kong).

We include deaths according to the year in which they occurred, although the death may not be registered until later than the year in which it occurred.

In Hong Kong, the registration of deaths is thought to have been accurate and complete since 1960 (United Nations, 1974). Under section 14 of the Births and Deaths Registration Ordinance (Chapter 174, Laws of Hong Kong), it shall be the duty for the informant (being the nearest relative or other relevant person of the deceased) to register a death from natural causes within 24 hours ([https://www.immd.gov.hk/eng/services/birth-death/Registering\\_a\\_death.html#a](https://www.immd.gov.hk/eng/services/birth-death/Registering_a_death.html#a)). As for a death resulting from unnatural causes such as poison, suicide or violence, these cases are reported to a Coroner ([https://www.immd.gov.hk/eng/services/birth-death/Registering\\_a\\_death.html#b](https://www.immd.gov.hk/eng/services/birth-death/Registering_a_death.html#b)).

### **Calculating Mortality Rates**

As noted above, death counts (i.e., the numerator for computing mortality rates) in Hong Kong cover the *de facto* population. Official population estimates (i.e., the denominator) cover the extended *de facto* population prior to 1996 and cover the resident population since 1996. Prior to 1996, the only difference in the coverage of the numerator (deaths) and denominator (population estimates) is that the former covers the *de facto* population, whereas the latter covers the extended *de facto* population (i.e., including Hong Kong Permanent Residents who are temporarily in the mainland of China or Macao at the reference date). We compared the *de facto* census counts for 1986 and 1991 with the extended *de facto* population estimates and found that the latter are generally larger than the former. In 1986, the total extended *de facto* population estimate of 5,524,600 (as of 7/1/1986) was 2.4% larger than the total *de facto* census count of 5,395,997 (as of 3/11/1986), but the biggest differential was at age 40 (where the extended *de facto* population estimate was 16.6% larger than the *de facto* population census counts, although the mortality rate is low at that age). In 1991, the total extended *de facto* population estimate of 5,752,000 (as of 7/1/1991) was 4.2% larger than the total *de facto* census count of 5,522,281 (as of 3/15/1991), but again the biggest differential was in the same cohort (i.e., those aged 45 in 1991: extended *de facto* population estimate was 17% larger than the *de facto* census count).

Since 1996, the numerator (registered deaths) covers the *de facto* population, whereas the denominator (population estimates) covers the "resident population." A comparison of the total *de facto* census count of 6,121,217 as of 3/15/1996 (Census and Statistics Department, 1996, Table 1, p. 12) with the resident population estimate of 6,435,500 (as of 7/1/1996) indicates that the latter was 5.1% larger than the former. Apart from the difference in the reference date, the differential occurs because the number of "Usual" and "Mobile" Hong Kong residents not in Hong Kong at the census reference date (who are counted in the resident population but not in the census) was larger than the number of non-residents (who are counted in the *de facto* census but not in the resident population). By 2016, the total Resident Population (7,336,585) was only 0.9% larger than the *de facto* population (7,269,503) (Census and Statistics Department, 2017b, Table 1, p. 22).

Numerator-denominator bias in the mortality rates resulting from discrepancies between the coverage of registered deaths and population estimates could result from two types of errors: 1) Hong Kong residents who die outside of Hong Kong are excluded from the numerator, which would artificially deflate the mortality rate; and 2) deaths of visitors are included in the numerator (but excluded from the denominator after 1996), which would artificially inflate the mortality rate. Thus, these two types of errors will, at least to some extent, offset one another. If they perfectly offset one another, then there will be no numerator-denominator bias.

Experts at C&SD argue that numerator-denominator bias is likely to be minimal. They say (personal communications, April 10 and 17, 2019),

*“We changed the compilation methodology of the population from de facto basis to resident population basis since 1996 because this can better reflect the mobility pattern of the Hong Kong population. In fact, we are of the view that the current compilation method is a better measure of the mortality situation in Hong Kong than that using de facto population. For instance, a person not present in Hong Kong at the reference time-point (not counted in the de facto population) may have returned to Hong Kong and died in Hong Kong during the reference period. In other words, a person who has left Hong Kong for one year or more and died outside Hong Kong will be excluded from both the numerator (de facto deaths) and the denominator (resident population) in the compilation of death rates. Thus, the window causing the so-called discrepancies is short (i.e. at most one year). Since old people seldom travel, the impact should be minimal.*

*Thus, it may be more appropriate to compare the deaths occurring during a one-year reference period to the resident population which is compiled on the basis of the duration of stay during a one-year reference period instead of the whereabouts at a specific time-point. This aspect is particularly relevant given that it is common for Hong Kong people to work or study outside Hong Kong and return frequently to Hong Kong.*

*Furthermore, it may not be appropriate to compare the number of babies under the de facto population and the resident population at the point of transition (i.e., 1996). During that time, many Hong Kong women gave births outside Hong Kong and brought the babies back to Hong Kong when they were less than one year old. In 1996, there were 3 653 such babies. Even though many of these babies might not be present in Hong Kong at the reference time-point, they had likely settled in Hong Kong during the reference period and should be considered in the compilation of mortality rates.”*

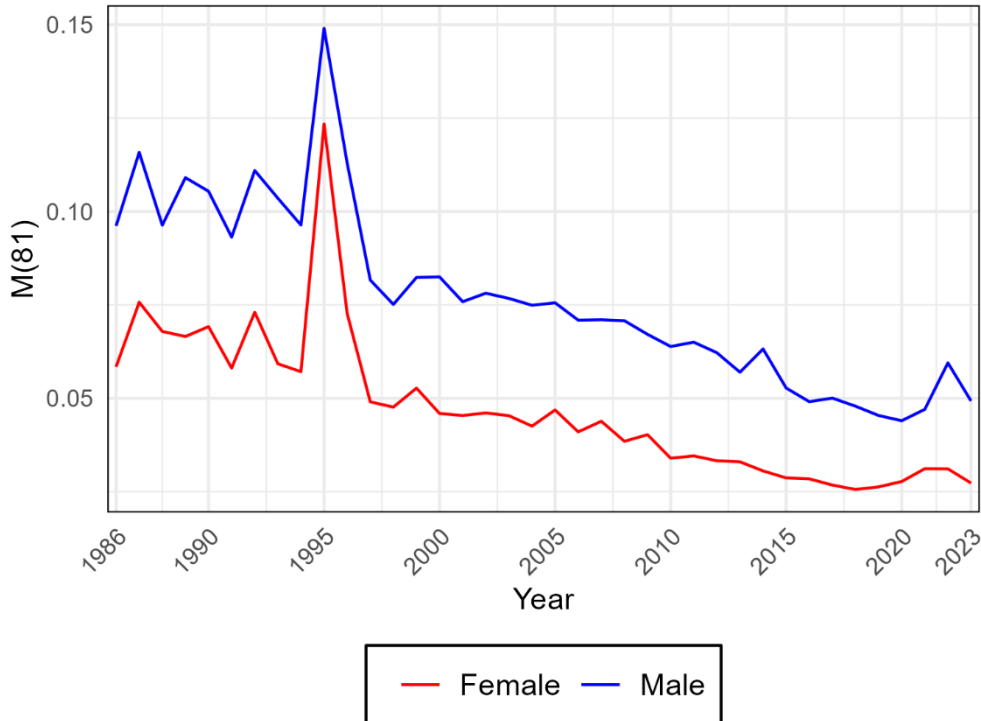
It is important to note that possible numerator-denominator bias afflicts many other HMD countries as well. For the USA prior to 1970, the numerator is based on *de facto* death counts, whereas the denominator is based on resident population estimates; after 1970, HMD mortality rates for the USA are based on resident population coverage for both the numerator and denominator. In the case of England and Wales, deaths represent the *de facto* population, whereas population estimates since 1912 cover the permanent resident population. There appears to be similar inconsistency between numerators and denominators for Australia (although it is not completely clear from the documentation). Furthermore, there are several countries in the HMD (e.g., Russia) for which the extent of possible numerator-denominator bias resulting from differences in coverage of deaths versus population remains unclear. Numerator-denominator bias is also common for Eastern European countries where the definition of the population used to produce annual estimates has been changing over time, and where national residents living abroad are often included (e.g., see HMD documentation files for Belarus and Poland).

Unfortunately, *de facto* census counts are not available by sex and age for the period since 1996. Thus, we are unable to determine how the ratio of the *de facto* to the resident population might have varied by sex and age, nor can we estimate alternative life tables using *de facto* census counts (rather than the official resident population estimates) to estimate exposure. We are unable to judge how much of a difference there would be in  $e_0$  if both the numerators and denominators used the same population coverage.

### Deaths at age 81 in 1995

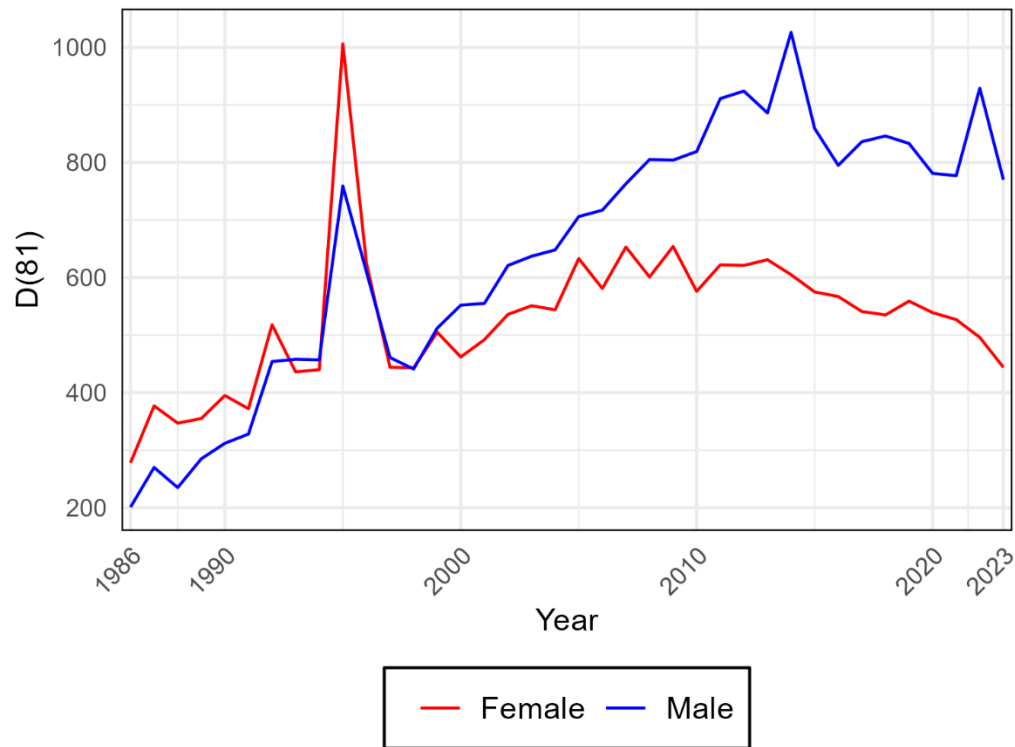
Among both sexes, there is an unusual spike in the death rate at age 81 in 1995 (Figure 1). This is because the number of registered deaths at age 81 in 1995 is almost double that of the figures for 1994 and 1996 years (Figure 2). We reported this anomaly to the Census and Statistics Department, but they found no errors. Thus, we have retained the recorded death although it leads to a higher death rate in the corresponding life table.

Figure 1. Death rates by year and sex, Hong Kong, Age 81





**Figure 2. Registered deaths at age 81.**



## **BIRTH COUNT DATA**

### ***Coverage and Completeness***

Like deaths, birth counts refer to the *de facto* population. According to the United Nations (1974), registration of births in Hong Kong has been accurate and reasonably complete since 1969. In Hong Kong, under section 7 of the Births and Deaths Registration Ordinance (Chapter 174, Laws of Hong Kong), parents of every child shall apply for the registration of the child's birth at a birth registry within 42 days. ([https://www.immd.gov.hk/eng/services/birth-death/Registration\\_of\\_a\\_Birth.html#aa](https://www.immd.gov.hk/eng/services/birth-death/Registration_of_a_Birth.html#aa)). The UN reports that birth registration for Hong Kong SAR was 90% or better in 2016 (United Nations Statistics Division, 2017).

### ***Specific Details***

Since birth counts refer to the *de facto* population, whereas official population estimates (since 1996) are based on the *resident population*, the figures need to be interpreted with care. The annual birth counts approximately doubled between 2001 and 2011, but this “baby boom” appears to be largely a result of a court ruling in July 2001 that gave babies born in Hong Kong to Chinese nationals the right of abode in Hong Kong (Census and Statistics Department, 2017a, p. 20). Subsequently, the number of births to mainland Chinese women whose spouses are not Hong Kong permanent residents (i.e., so-called “Type II babies”) increased from 620 in 2001 to a peak of 35,736 in 2011 (Census and Statistics Department, 2017a, Table 3.2). This baby boom ended in 2013 when Hong Kong implemented the “zero-quota policy” on obstetric

services for this group.<sup>5</sup> The number of Type II babies (i.e., born to mainland Chinese women whose spouses are not Hong Kong permanent residents) declined from 26,715 in 2012 to 790 in 2013 and further dropped to 606 in 2016 (Census and Statistics Department, 2017a, Table 3.2).

Since the HMD uses the *resident population* estimates, we do not believe this issue regarding the *de facto* birth counts will notably affect our mortality estimates. Our January 1<sup>st</sup> HMD estimates of the annual population aged 0 (which are based on the official resident population estimates) do not show a baby boom like the *de facto* birth counts. For example, whereas the *de facto* birth count for 2011 was 95,451, our estimate of the age 0 population on January 1, 2012 was only 51,900.

## **DATA QUALITY ISSUES**

There is a significant gap in life expectancy estimates produced by HMD and those published by C&SD. HMD underestimates life expectancy, relative to the figures from the official publications in recent years. The gap widens with advancing age and manifests significantly more for males than for females. For example, in 2020 at age 80, C&SD estimates the male life expectancy at 12.1 years, whereas HMD estimate for male  $e(80)$  was only 10.24 years, thus creating a gap of approximately 1.8 years. The same difference at age 0 was only 1.2 years. The work is currently underway to determine whether the HMD methods, the raw data, or both are producing these artifacts.

## **REVISION HISTORY**

***Changes with the January 2025 revision:*** Population estimated using the Survival Ratio-Extinct Cohort method was based on population input at age 85+ in 2021-2023, relative to 2019-2020 inputs, ending at 90+. This could lead to up to 5% differences in some oldest ages in the years covering 2019-2020.

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<sup>5</sup> Although the publication does not provide any further explanation of the “zero-quota policy”, we found the following information online (<https://www.info.gov.hk/gia/general/201605/18/P201605180628.htm>): “...all public hospitals have stopped accepting delivery bookings from non-local pregnant women since January 1, 2013, and private hospitals have also unanimously agreed not to accept any delivery bookings, since 2013, made by doubly non-permanent resident (DNR) pregnant women (i.e. Mainland pregnant women whose spouses are not Hong Kong permanent residents) (commonly known as ‘zero-quota policy’).”

## **REFERENCES**

- Benitez, M.A.. (2003). Expert committee reviews SARS outbreak in Hong Kong. *The Lancet* 362(9384):624.
- Census and Statistics Department. (1996). 1996 Population By-Census: Summary Results. Hong Kong: Census and Statistics Department.ong Kong Government Printer. Retrieved 26 August 2019 ([https://www.statistics.gov.hk/pub/hist/1991\\_2000/B11200851996XXXXE0100.pdf](https://www.statistics.gov.hk/pub/hist/1991_2000/B11200851996XXXXE0100.pdf)).
- Census and Statistics Department. (2002). Compiling Population Estimates of Hong Kong. Pp. FD1-FD13 in: *Hong Kong Monthly Digest of Statistics*. Retrieved 21 February 2009 (<https://www.censtatd.gov.hk/hkstat/sub/sp150.jsp?productCode=FA100123>).
- Census and Statistics Department. (2012). Trends in Population and Domestic Households in Hong Kong. Pp. FA5-FA8 in: *Hong Kong Monthly Digest of Statistics, April 2012*. Retrieved 15 April 2019 (<https://www.statistics.gov.hk/pub/B71204FA2012XXXXB0100.pdf>). Census and
- Statistics Department. (2017a). *Demographic trends in Hong Kong 1986-2016*. Kowloon, Hong Kong: Census and Statistics Department, Hong Kong Special Administrative Region. Retrieved 3 December 2018 (<https://www.censtatd.gov.hk/hkstat/sub/sp20.jsp?productCode=B1120017>).
- Census and Statistics Department. (2017b). *2016 Population By-Census: Summary Results*. Hong Kong: Census and Statistics Department. Retrieved 15 April 2019 (<https://www.byensus2016.gov.hk/data/16bc-summary-results.pdf>).
- Census and Statistics Department. (2018a). Fertility trends in Hong Kong. Retrieved 14 July 2019 ([https://www.censtatd.gov.hk/fd.jsp?file=B71812FA2018XXXXB0100.pdf&product\\_id=FA100090&lang=1](https://www.censtatd.gov.hk/fd.jsp?file=B71812FA2018XXXXB0100.pdf&product_id=FA100090&lang=1)). Census and Statistics Department. (2018b). Population: Concepts and Methods. Retrieved 3 December 2018 (<https://www.censtatd.gov.hk/hkstat/sub/sc20.jsp>).
- Census and Statistics Department. (2024). Hong Kong in Figures. Retrieved 11 November 2024 ([https://www.censtatd.gov.hk/en/data/stat\\_report/product/B1010006/att/B10100062024AN24B0100.pdf](https://www.censtatd.gov.hk/en/data/stat_report/product/B1010006/att/B10100062024AN24B0100.pdf)).
- Cheung, S.L.K., J-M. Robine, E.J-C. Tu, G. Caselli. (2005). Three dimensions of the survival curve: horizontalization, verticalization, and longevity extension. *Demography* 42(2):243-258.
- Hong Kong. (1911). Hong Kong Report 1911. Hong Kong: Government Printer.
- Hong Kong Census. (1963). Hong Kong Census 1961: Hong Kong Life Tables 1961-1968. Hong Kong: Jack Ranyard Lee, Acting Government Printer at the Government Press.
- Hong Kong SAR Government. (2019). Hong Kong – the Facts. Last revision date: February 2019. Retrieved August 4, 2019 (<https://www.gov.hk/en/about/abouthk/facts.htm>).
- Lau, Bobo Hi-Po and Cheung, SL Karen. (2016). Hong Kong Centenarian Study. In: Pachana, N. (ed.), *Encyclopedia of Geropsychology*.. Singapore: Springer. DOI 10.1007/978-981-287-080-3\_75-1.

- Leung G.M., L.M. Ho, T.H. Lam, A.J. Hedley. (2009). Epidemiology of SARS in the 2003 Hong Kong epidemic. *Hong Kong Med J* 15(Suppl 9):S12-6.
- Mok, Benjamin N. H. (1962). Hong Kong Census 1961: Population Projections 1961-1971. Hong Kong: Jack Ranyard Lee, Acting Government Printer at the Government Press.
- United Nations, Economic and Social Commission for Asia and the Pacific. (1974). *Population of Hong Kong*. ESCAP Country Monograph Series No. I.
- United Nations Statistics Division. (2017). Coverage of civil registration system, births and deaths [electronic resource]. Retrieved 10 June 2019 (<https://unstats.un.org/unsd/demographic-social/crvs/>).

## APPENDIX 1:

### DESCRIPTION OF THE ORIGINAL DATA USED FOR HMD CALCULATIONS

#### DEATHS

| Period    | Type of Data   | Age groups         | Comments | RefCode(s) <sup>†</sup> |
|-----------|--|--------------------|----------|-------------------------|
| 1986–2000 | Annual death counts by single year of age, <i>de facto</i> | 0,1...99+,<br>UNK  |          | 1                       |
| 2001–2023 | Annual death counts by single year of age, <i>de facto</i> | 0,1...100+,<br>UNK |          | 1, 2, 3, 4              |

Note: Within a given year and age subgroup, deaths of unknown sex (for 1986-2019) were redistributed proportionately based on the observed sex distribution of deaths where sex was known (see NoteCode #1 in HKGnote.txt).

† The reference code is used in the raw data files (Input Database) to link data with sources.

#### POPULATION

| Period    | Type of Data  | Age groups   | Comments | RefCode(s) <sup>†</sup> |
|-----------|---|--------------|----------|-------------------------|
| 1986-1995 | Annual population estimates (July 1 <sup>st</sup> ), extended <i>de facto</i> | 0,1,2,...85+ |          | 41                      |
| 1996-2000 | Annual population estimates (July 1 <sup>st</sup> ), resident population‡     | 0,1,2,...85+ |          | 41                      |
| 2001-2020 | Annual population estimates (July 1 <sup>st</sup> ), resident population‡     | 0,1,2,...90+ |          | 41, 42                  |
| 2021-2023 | Annual population estimates (July 1 <sup>st</sup> ), resident population‡     | 0,1,2,...85+ |          | 43                      |

Note: Because of precision concerns, C&SD estimates the population only to the nearest one hundred. In 1986, the smallest population estimate was for men aged 84 (n=1500); thus, even if C&SD estimated the population to the nearest individual, it would differ by, at most, +/- 3.3% (50 out of 1500).

† For more information, see the references file for the raw data.

‡ Prior to August 2000, the extended *de facto* approach was used to compile population estimates. Since then, the resident population approach has been adopted in place of the extended *de facto* approach. Revised population figures backdated to 1996 have been compiled to replace the old estimates.

#### BIRTHS BY SEX

| Period    | Type of Data  | Comments   | RefCode(s) |
|-----------|---|--|------------|
| 1948-2017 | Live birth counts for the <i>de facto</i> population by sex and calendar year | Birth counts prior to 1961 represent live births by year of registration, whereas birth counts since 1961 represent live births by year of occurrence. | 10         |
| 2018-2023 | Live birth counts for the <i>de facto</i> population by sex and calendar year | Represent live births by year of occurrence.   | 12, 14, 16 |

## **BIRTHS BY MONTH**

| Period    | Type of Data  | Comments | RefCode(s)     |
|-----------|---|----------|----------------|
| 1971-2023 | Live birth counts for the <i>de facto</i> population by month and calendar year |          | 11, 13, 15, 17 |

**APPENDIX 2:  
ADDITIONAL DATA USED ONLY FOR COMPARISON**

**CENSUS COUNTS**

| Period | Type of Data  | Age groups                                 | Comments | RefCode(s) <sup>†</sup> |
|--------|---|--|----------|-------------------------|
| 1986   | Census (Mar 11 <sup>th</sup> ), <i>de facto</i>             | 0,1,2,... 84, 85-89,<br>90-94, 95-99, 100+ |          | 20                      |
| 1991   | Census (Mar 15 <sup>th</sup> ), <i>de facto</i>             | 0,1,2,...100+                              |          | 21                      |
| 1996   | Census (Mar 15 <sup>th</sup> ), <i>de jure</i>              | 0,1,2,...75+                               |          | 22                      |
| 2001   | Census (Mar 14 <sup>th</sup> ), <i>resident population</i>  | 0,1,2,...85+                               |          | 23                      |
| 2006   | Census (July 14 <sup>th</sup> ), <i>resident population</i> | 0,1,2,...100+                              |          | 24                      |
| 2011   | Census (June 30 <sup>th</sup> ), <i>resident population</i> | 0,1,2,...100+                              |          | 26                      |
| 2016   | Census (June 30 <sup>th</sup> ), <i>resident population</i> | 0,1,2,...100+                              |          | 26                      |
| 2021   | Census (June 30 <sup>th</sup> ), <i>resident population</i> | 0,1,2,...100+                              |          | 26                      |