Living with Statistics

2025

Census and Statistics Department
Hong Kong Special Administrative Region

Living with Statistics

2025 Edition

Contents

Introduction

As part of the programme for promoting statistical literacy, the Census and Statistics Department (C&SD) releases annually the teaching kit entitled *"Living with Statistics"*. The teaching kit aims mainly at providing secondary school teachers and students with a convenient means of accessing reference materials on commonly used statistical methods and official statistics in Hong Kong. It also touches upon statistical methods as well as possible pitfalls that should be avoided in applying statistics.

With a better understanding of official statistics and proper statistical methods, students will be able to enhance their awareness and appreciation of statistical information in interpreting the social and economic situations of our society in an objective and effective manner.

The following symbols are used throughout the teaching kit :

\#   Provisional figures

@   Figures are subject to revision later on

Part   I

Official statistics

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1 Population size and growth

Introduction

Population estimates are widely used by the Government for planning and policy formulation. The private sector and the academia also use population estimates for business or research purposes.

Births, deaths and net movements[1] are the three factors that affect population growth. This chapter describes how the size of a population and its change can be measured. Various statistical indicators of their trends are also introduced. Finally, a few general characteristics of population growth are outlined in relation to these determining factors.

Concepts of compiling population estimates

Basically, there are two enumeration concepts to count the population of a country / territory, namely the "de jure" concept and the "de facto" concept.

Under the "de jure" concept, all persons who usually live in a country / territory at a particular reference time-point (usually taken as the middle of a year) will be counted as the population of the country / territory.

Under the "de facto" concept, the population includes all persons who are in the country / territory at the reference time-point. This method is equivalent to taking a "snapshot" of the population at a reference time-point.

In practice, the two concepts can be used in conjunction.

Previous method of compiling population estimates in Hong Kong

The "extended de facto" method was used for compiling the series of population estimates for Hong Kong up to 1995. Under the "extended de facto" approach, the Hong Kong population covers all persons who are physically in Hong Kong at the reference time-point, including Hong Kong Permanent Residents and Hong Kong Non-permanent Residents as well as visitors. "Extended" relates to the fact that for a Hong Kong Permanent Resident, he / she will still be counted as part of the

Note :
(1) In the case of Hong Kong, movements of people from Hong Kong to overseas countries, the mainland of China (the Mainland) or Macao for living, studying or working, and vice versa, are all regarded as movements.

Hong Kong population if, at the reference time-point, he / she is not in Hong Kong but is temporarily in the mainland of China (the Mainland) or Macao.

The application of the "extended" compilation method in the past was intended to avoid fluctuations in the population estimates around major public holidays when there were enormous temporary movements of people between Hong Kong and the Mainland / Macao.

Current method of compiling population estimates in Hong Kong

As from August 2000, the "resident population" method has been adopted in compiling the population estimates in Hong Kong in view of the changing residency and mobility patterns of Hong Kong people.   Population figures have been compiled with the new method to 1996 retrospectively.

"Resident population" is a relatively clear-cut concept according to international statistical standards.   However, the practical definitions adopted vary from place to place, as the residency and mobility patterns unique to each place need to be given adequate consideration.   International statistical organisations have particularly pointed out that, owing to business and social developments, the mobility of residents of certain countries / territories is rather high.   In handling the population statistics of these countries / territories, the authorities concerned should consider the situation in depth.   In the case of Hong Kong, studies have shown that the "resident population" of Hong Kong (which is referred to as the "Hong Kong Resident Population") should be defined to include "Usual Residents" and "Mobile Residents".

"Usual Residents" include two categories of people : (1) Hong Kong Permanent Residents who have stayed in Hong Kong for at least three months during the six months before the reference time-point, or for at least three months during the six months after the reference time-point, regardless of whether they are in Hong Kong or not at the reference time-point; and (2) Hong Kong Non-permanent Residents who are in Hong Kong at the reference time-point.

Hong Kong Non-permanent Residents (such as foreign domestic helpers and persons of Chinese or foreign nationalities entering Hong Kong for work or study) are grouped under "Usual Residents".   This is because for the duration that they hold the status of "Non-permanent Resident", they can be expected to be usually staying in Hong Kong.

For those Hong Kong Permanent Residents who are not "Usual Residents", they are classified as "Mobile Residents" if they have stayed in Hong Kong for at least one month but less than three months during the six months before the reference time-point, or for at least one month but less than three months during the six months after the reference time-point, regardless of whether they are in Hong Kong or not at the reference time-point.

The amount of time of stay in Hong Kong of "Mobile Residents" (such as persons who usually work or study outside Hong Kong but occasionally return to Hong Kong) is less than that of "Usual Residents".   Nevertheless, the "Mobile Residents" have a close link with Hong Kong and most probably they have a regular residence in Hong Kong and utilise much of Hong Kong's facilities and services.   In this regard, they should be considered as part of the Hong Kong population.

Under the "resident population" approach, visitors are not included in the Hong Kong population.

For details of the compilation methodology of population estimates, please see the feature article "Compiling Population Estimates of Hong Kong" published in the February 2002 issue of *Hong Kong Monthly Digest of Statistics* released by the Census and Statistics Department (C&SD).

Population data system

To furnish data users with the latest information on the position of the Hong Kong population, it is the standing practice of C&SD to update and release the population estimates every half-year.   The updated estimates relate to the mid-year and year-end positions.

In Hong Kong, the compilation of population estimates is supported by a comprehensive population data system.   The main component of the system is the population censuses and by-censuses which provide benchmarking population data, as well as the prime sources of data for small geographical areas and population sub-groups.   Apart from population censuses and by-censuses, the population data system also covers sample surveys as well as statistical data compiled based on administrative systems such as birth, death and passenger movement records.   Taking all information together, they provide a population statistical database for compiling various types of population figures.

1 Population size and growth

Population censuses and by-censuses taken in Hong Kong

Since 1961, Hong Kong has been conducting a full population census every 10 years, and a population by-census on the basis of a sample between two full censuses. Population censuses were conducted in 1961, 1971, 1981, 1991, 2001, 2011 and 2021 while population by-censuses in 1966, 1976, 1986, 1996, 2006 and 2016.

The aim of conducting population censuses / by-censuses is to obtain up-to-date benchmark information on the socio-economic characteristics of the population and its geographical distribution. They provide benchmark data for studying the direction and trend of population changes. The data are key inputs for compiling projections concerning population, household, labour force and employment.

Population censuses / by-censuses differ from other general sample surveys of households in their sizable scale, which enable them to provide statistics of high precision, even for population sub-groups and small geographical areas. Such information is vital to the Government for planning and policy formulation, as well as to the private sector and academia for business and research purposes.

For both the 1961 and 1971 Population Censuses, all persons in the population were counted and enquired of their socio-economic characteristics. In the 1981, 1991, 2001, 2011 and 2021 Population Censuses, there was a complete headcount of all persons by age and sex while the detailed characteristics of households and persons were collected from a large sample. Through the use of appropriate computation methods, statistics on the size and characteristics of the population can be compiled by combining the data from the simple enumeration and the detailed enquiry.

A by-census differs from a census in not having a complete headcount of the population but simply focusing enquiry on the detailed characteristics of a large sample of the population. The size and characteristics of the entire population are inferred from the sample results in accordance with appropriate statistical theory.

To modernise the population censuses in Hong Kong, reduce respondent burden in completing the questionnaires as well as the operational risks and costs in the long run, the following re-engineering initiatives will be implemented from the 2026 Population Census onwards :
(1) conducting only a sample enumeration using the "long form" every 5 years, in lieu of a full census once every 10 years and a by-census in between;
(2) extending the data collection period from 1.5 months to 1 year; and
(3) using government administrative data more extensively to supplement survey data.

The 2021 Population Census

In the 2021 Population Census (21C), about nine-tenths of the households in Hong Kong were subject to simple enumeration to provide basic demographic information using a "Short Form" questionnaire, and the remaining one-tenth of the households were subject to more detailed enquiry on a broad range of demographic and socio-economic characteristics using a "Long Form" questionnaire.

The 21C covers the Hong Kong Resident Population under the "resident population" approach. The "resident population" approach has been adopted to compile the population estimates of Hong Kong since August 2000, so as to take into account the changing residency and mobility patterns of the Hong Kong population (see also the previous section on the "resident population" method).

A multi-modal data collection approach was adopted in the 21C. Under this approach, data were collected through different means including online questionnaires, telephone interviews and postal returns with pre-paid envelopes (for "Short Form" only). Census officers from C&SD then conducted face-to-face interviews with households that had not submitted their questionnaires and used mobile tablets to record information of the households at the later stage of the data collection period.

A multi-modal data collection approach was adopted in the 2021 Population Census.

A poster on how to verify the identity of census officers of the 2021 Population Census

1   Population size and growth

Population size

In mid-2024, the population of Hong Kong was 7.52 million.   In 1841, the population was only 7 500.   During the past century or so, the population experienced a substantial increase.

Chart 1.1   **Mid-year population of Hong Kong, 1841 – 2024**
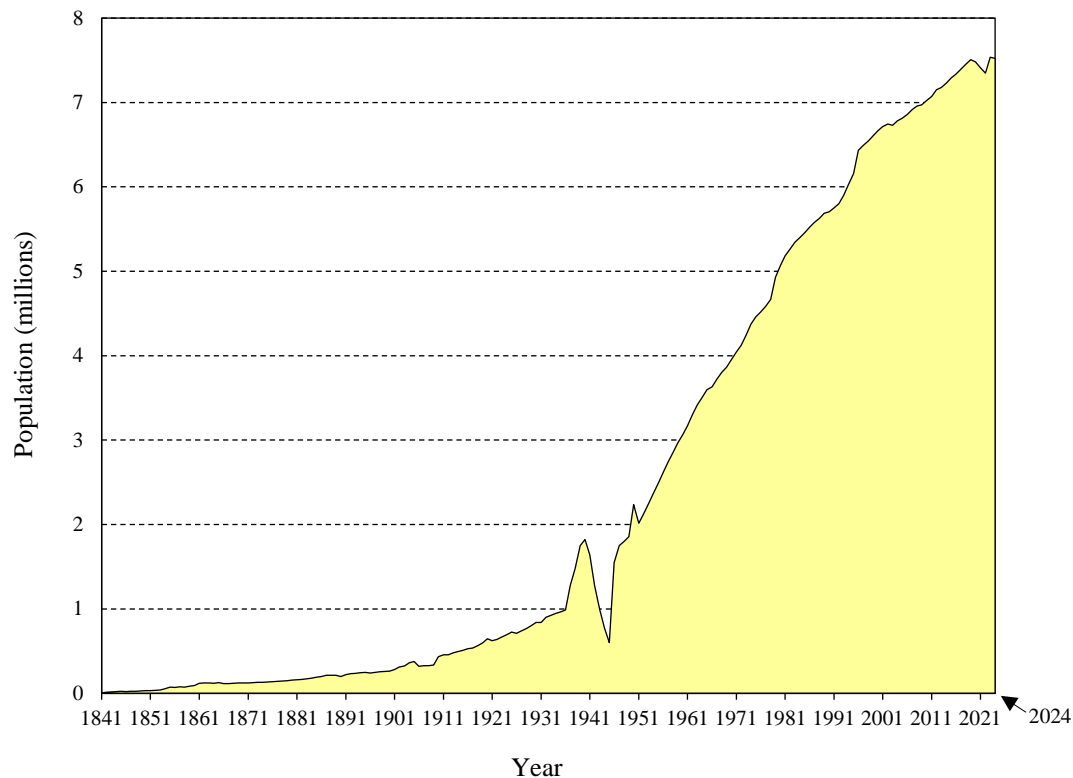
Growth rate of the population

To measure the speed of population change, the growth rate can be calculated by dividing the increase in population during a period by the population size at the beginning of that period.

Thus, given that the population increased from 7 536 100 at mid-2023 to 7 524 100 at mid-2024, the population grew at a rate of

$$\frac{7\ 524\ 100 - 7\ 536\ 100}{7\ 536\ 100} \times 100\% = \underline{\underline{-0.2\%}}^{\,\wedge}$$

during the period from mid-2023 to mid-2024.

If the population increased in the period, the growth rate would have been a positive number.

1   Population size and growth

Compound average growth rate of the population

For a span of time over a number of years, it is a common practice to measure the average annual growth rate on a compound basis.

The population was 7 524 100 at mid-2024 and 7 507 900 at mid-2019 (i.e. five years ago). If the unknown compound average growth rate is *r%* per annum during the 5-year period from mid-2019 to mid-2024, then

$$\left[\begin{matrix} \text{Population} \\ \text{at mid-2024} \end{matrix} \right] = \left[\begin{matrix} \text{Population} \\ \text{at mid-2019} \end{matrix} \right] \times \left(1 + \frac{r}{100} \right)^5$$

or $\qquad 7\ 524\ 100 = 7\ 507\ 900 \times \left(1 + \dfrac{r}{100} \right)^5$

Hence $\qquad r = \left(\sqrt[5]{\dfrac{7\ 524\ 100}{7\ 507\ 900}} - 1 \right) \times 100 = \underline{\underline{0.04}}^{\wedge}$

That is, the compound average growth rate of the population was 0.04%^ per annum during the 5-year period from mid-2019 to mid-2024.

Three factors affecting population growth

There are three factors affecting the population growth, namely births, deaths and net movements.

At different times, some factors may have greater effects than the others. To study their contributions to population growth, it is useful to express the change in population size in terms of its components :

$$P_1 - P_0 \quad = \quad (B - D) + (E - L)$$

where P_1 =   population at end of the period
         P_0 =   population at beginning of the period
         B =   live births during the period
         D =   deaths during the period
         $(B - D)$ =   natural change during the period
         E =   number of entrants during the period
         L =   number of leavers during the period
         $(E - L)$ =   net movement during the period

Chart 1.2   Annual change in population of Hong Kong, mid-1961 to mid-2024[2]

(a) Annual change in population size
[= (b) Natural change + (c) Net movement]

(b) Natural change

(c) Net movement
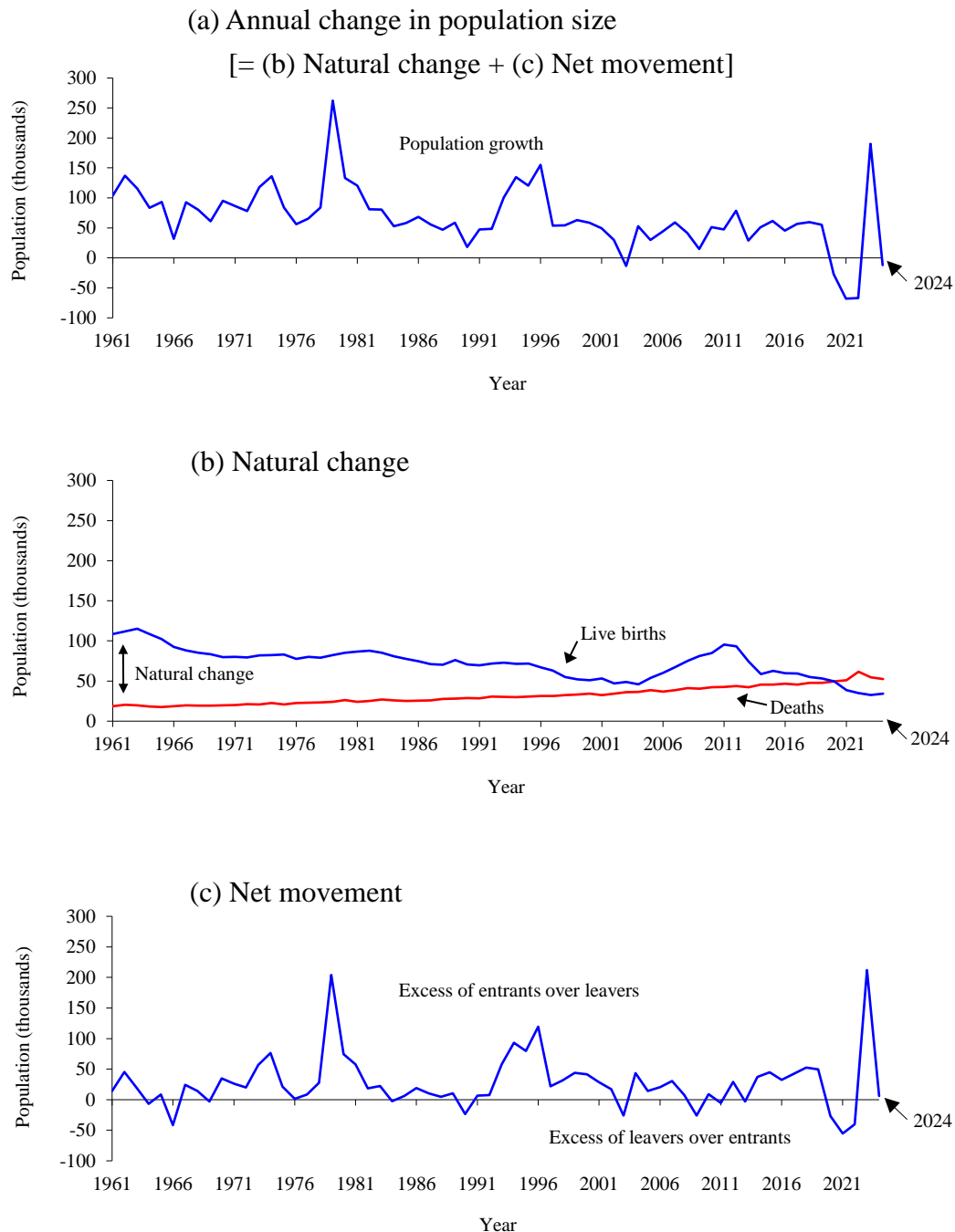
Note :

(2)   Population figures from 1996 onwards are compiled based on the "resident population" method and are broadly comparable with figures for 1995 and before.   Notwithstanding this, the population figure for 1996 compiled based on the old method (i.e. 6 311 000) has been used in calculating the population growth and net movement from 1995 to 1996.

1 Population size and growth

Stock-flow relationship

To understand the equation shown in the above section, take the size of population at a point of time as a pool of water (i.e. the population "stock"), its level being raised by adding water from the tap (i.e. inflows of births and entrants) and lowered by draining water away through the plughole (i.e. outflows of deaths and leavers).   Thus, the population size measures the stock at a particular point of time, whereas changes in all the components, or "flows", contribute to changes in the stock size during an interval of time.

Crude birth rate

The childbearing trend in the population is measured by the birth rate, which is expressed in terms of number of births per 1 000 population.

The crude birth rate is calculated by dividing the number of known "live births[3]" born in a calendar year by the average population size during the calendar year.   Usually the mid-year population is taken as the average population size.

Thus, in 2024, with 36 700 live births and a mid-year population of 7 524 100, the crude birth rate is equal to

$$\left(\frac{36\ 700}{7\ 524\ 100} \times 1\ 000 \right) \ = \ \underline{\underline{4.9}}^{\wedge}$$

or   4.9^ per 1 000 population.

Note :

(3)   Live births are defined as babies born with evidence of life, such as respiration, movement of voluntary muscles or heartbeat after complete expulsion or extraction.

Chart 1.3   Crude birth rate, 1961 – 2024
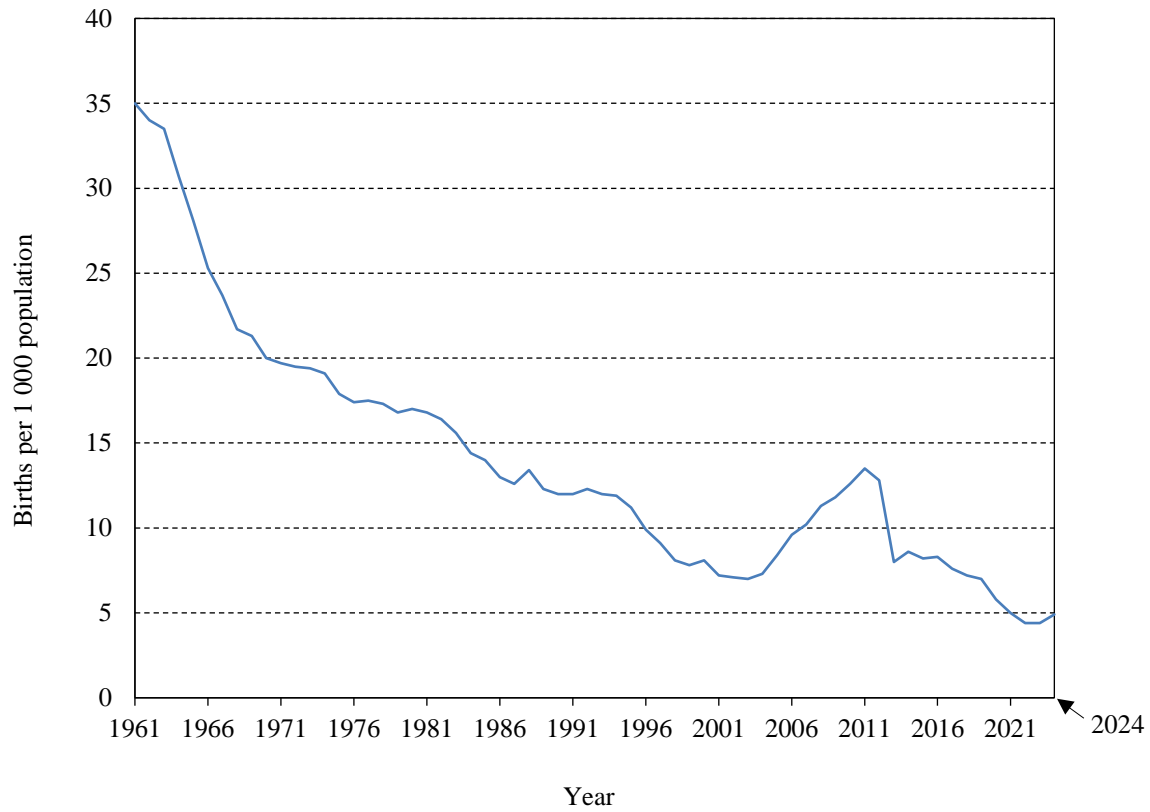
General fertility rate

Sometimes, the crude birth rate does not reflect correctly the birth trend.   For instance, an inflow of male immigrants increases the population size, leading to a lowered birth rate, but the birth trend may not have changed actually.

This pitfall can be avoided by using the general fertility rate, which relates the number of births to the number of women of childbearing age (i.e. those aged 15 to 49) in the population.   The rate is usually expressed in terms of number of births per 1 000 females of childbearing age.

There is a special issue for Hong Kong.   There are a large number of female foreign domestic helpers working in Hong Kong, yet the great majority of whom will not give birth to children here.   To better reflect the fertility situation in Hong Kong, female foreign domestic helpers are excluded from the number of women of childbearing age in computing the general fertility rate.

Chart 1.4   General fertility rate and crude birth rate, 1961 – 2024

General fertility rate
(per 1 000 females of childbearing age, excluding
female foreign domestic helpers)

Crude birth rate (per 1 000 population)

Births per 1 000 related population

Year
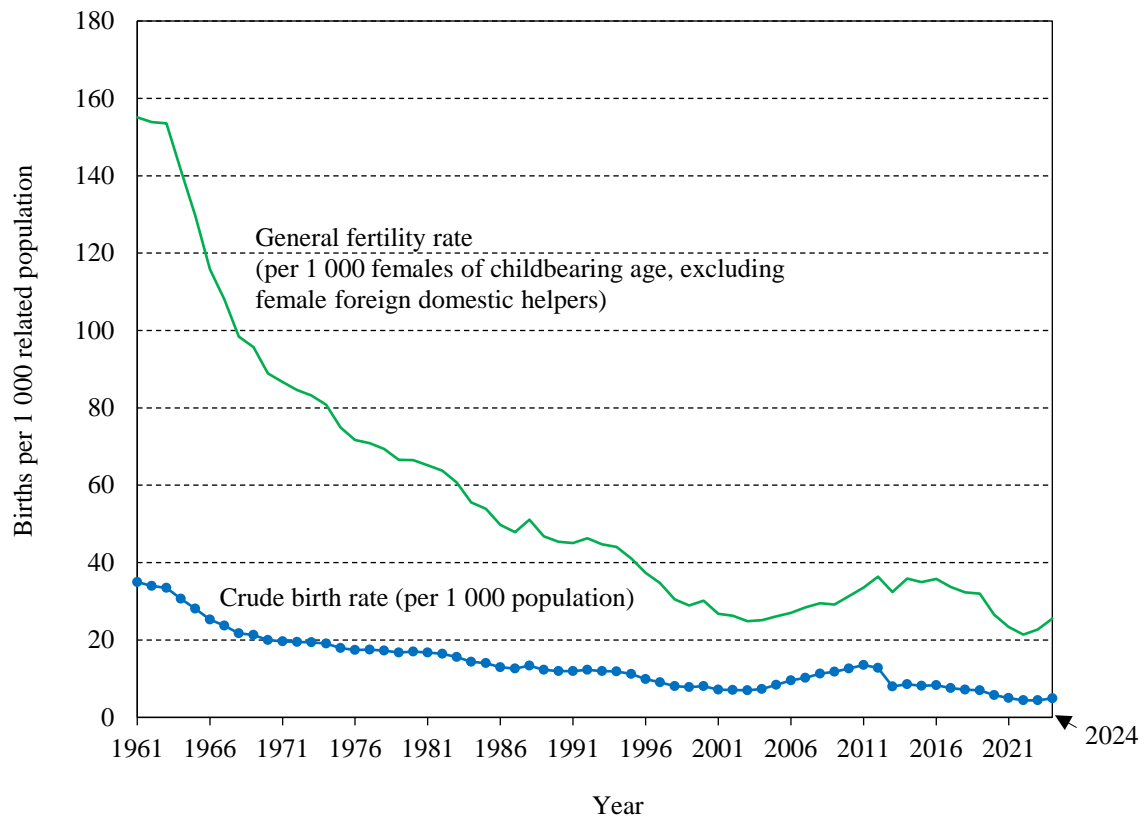
Decline in birth trend

Since the 1970's, the birth rate in Hong Kong has been falling rapidly.   This is mainly because of late marriage.   The median age of women who got married for the first time[4] was 22.9 in 1971, while that in 2024 was 31.0.

Over the same period, there is also a significant increase in the prevalence of spinsterhood.   In 1971, the proportion of never married women in the age group 40-44 was 2.9%.   In 2021, this proportion reached 19.3%.

Furthermore, people tend to have children later after marriage and have fewer children than before.   Among all the births recorded in 2024, 89.5% were the first or second births to their mothers as compared with 86.8% in 1994.   Correspondingly, the average household size of domestic households dropped from 3.4 persons per household in 1994 to 2.6 in 2024, indicating a tendency towards the formation of smaller households.

Note :

(4)   Median age at first marriage is an indicator of the average age of persons at their first marriage such that 50% of these persons are above this age while the other 50% are below it.

Chart 1.5   Live births by order, 1971 – 2024

Legend:
- 1st order live births
- 2nd order live births
- 3rd order live births
- 4th and higher order live births
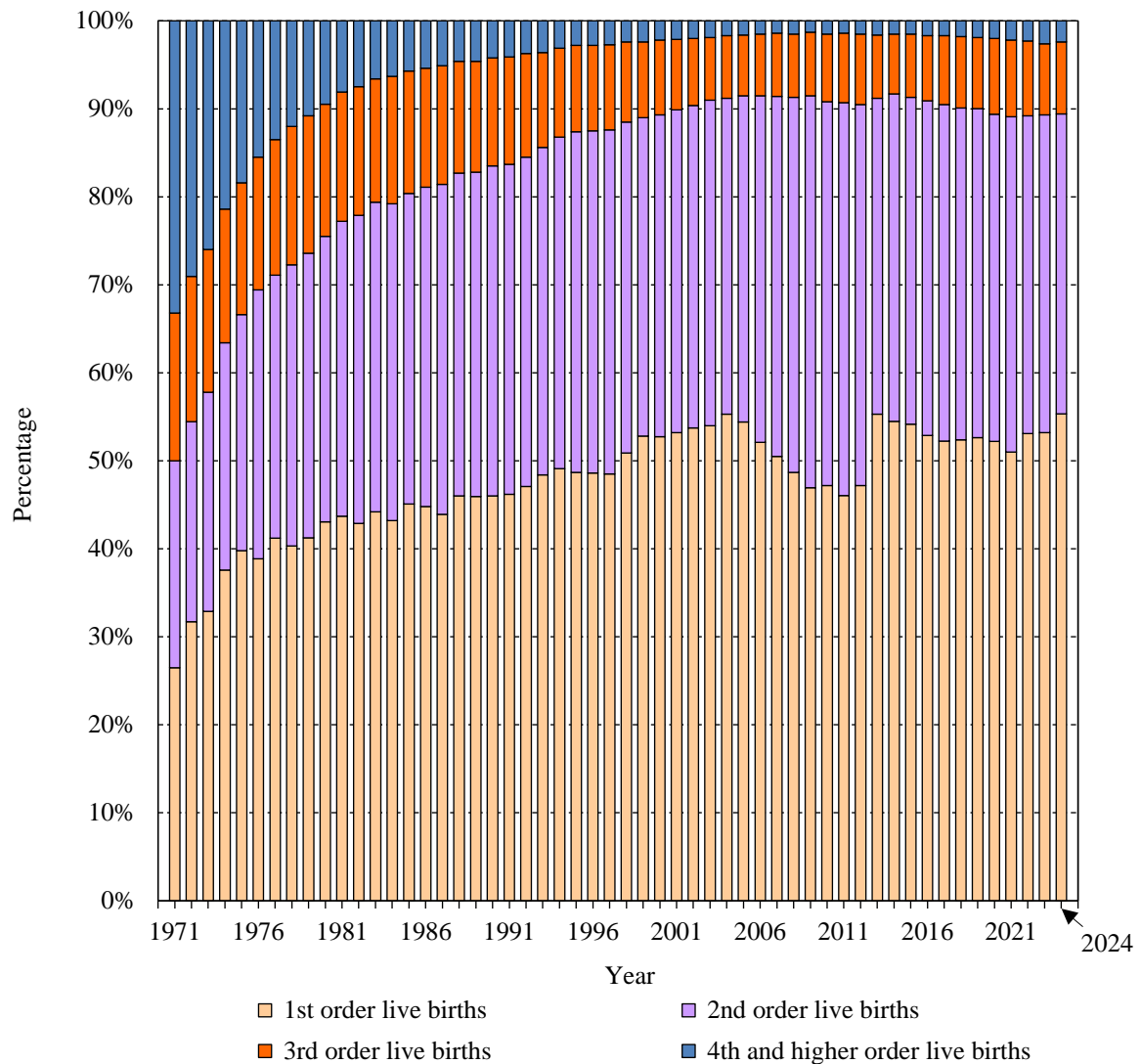
Crude death rate

To measure the death trend, the crude death rate is calculated by dividing the number of known deaths in a calendar year by the average population size during the calendar year.   Usually the mid-year population is taken as the average population size and the crude death rate is expressed in terms of number of deaths per 1 000 population.

In 2024, with 51 400[#] deaths and a mid-year population of 7 524 100, the crude death rate equals

$$\frac{51\ 400^{\#}}{7\ 524\ 100} \times 1\ 000 = \underline{\underline{6.8}}^{\#\wedge}$$

or   6.8[#^] per 1 000 population.

Chart 1.6   **Crude birth rate and crude death rate, 1961 – 2024**
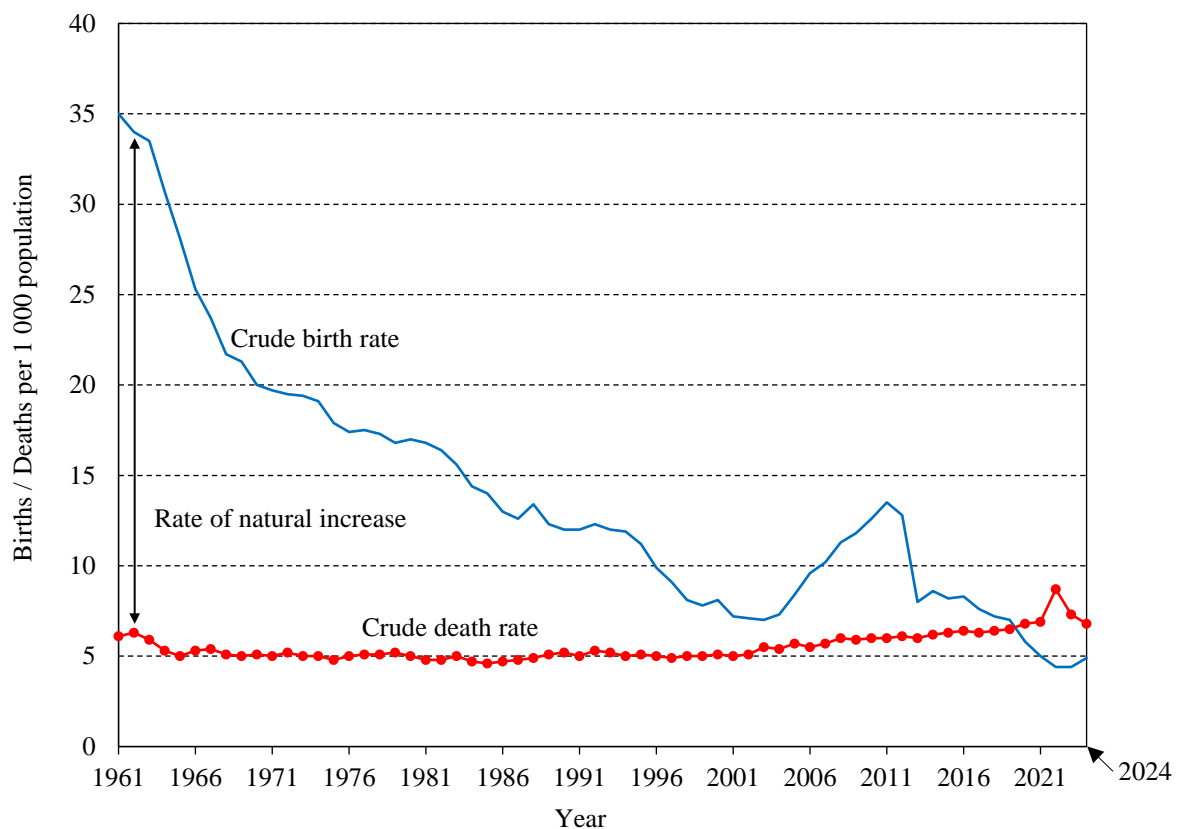
Rate of natural change

The excess of known live births over known deaths occurring in a year is called the natural change in population.

The rate of natural change is given as the excess of known live births over known deaths occurring in a year per 1 000 mid-year population of that year. This indicator shows that the rate at which the change in population is due to vital events (viz. births and deaths) only. The gain or loss in population due to net movement is not taken into account.

During the year 2024, there were 36 700 known live births and 51 400[#] known deaths. With a mid-year population of 7 524 100, the rate of natural change during the year equals

$$\left(\frac{36\ 700 - 51\ 400^{\#}}{7\ 524\ 100} \times 1\ 000 \right) = \underline{\underline{-1.9}}^{\#^{\wedge}}$$

or   -1.9[#^] per 1 000 population.

Alternatively, the rate of natural change may be computed by the difference between the crude birth rate and the crude death rate.   For the above example, the rate of natural change may also be calculated as crude birth rate for 2024 <u>minus</u> crude death rate for 2024 (i.e. $4.9^{\wedge} - 6.8^{\#\wedge} = -1.9^{\#\wedge}$) or $-1.9^{\#\wedge}$ per 1 000 population (see Chart 1.6).

Effect of age structure on birth and death rates

For a population with more women at childbearing age, the crude birth rate will normally be higher.   For a population with more old people, the crude death rate can be expected to be higher.   It is therefore necessary to study the age composition of a population before definitive statements can be made about its birth and death trends.   More in-depth studies of the population will adopt appropriate methods to isolate the age composition effects such that the birth and death trends at different points of time or among different countries can be meaningfully compared.

Expectation of life at birth

The crude death rate for the population of Hong Kong has been greatly reduced since the 1950's, which fell from 10.2 per 1 000 population in 1951 to 5.0 per 1 000 population in 1971.   The rate has remained rather stable since then.   It has to be noted, however, that at a time when the population of old persons is increasing, a stable crude death rate actually suggests an overall improvement in the death trend.

A lower death trend would mean that people can expect a longer life.   Thus, the death trend may also be measured by the "expectation of life at birth".   This indicates how long a child born in a year, say 2024, would expect to live, assuming that upon reaching various ages in his / her life, he / she would be subject to the same death risks as those faced by people of the respective ages in 2024.

The expectation of life at birth in 2024 was $82.8^{\#}$ years for males and $88.4^{\#}$ years for females, representing a substantial increase of $7.1^{\#}$ years for males and $6.9^{\#}$ for females since 1994.

1 Population size and growth

Chart 1.7　　　Expectation of life at birth, 1971 – 2024
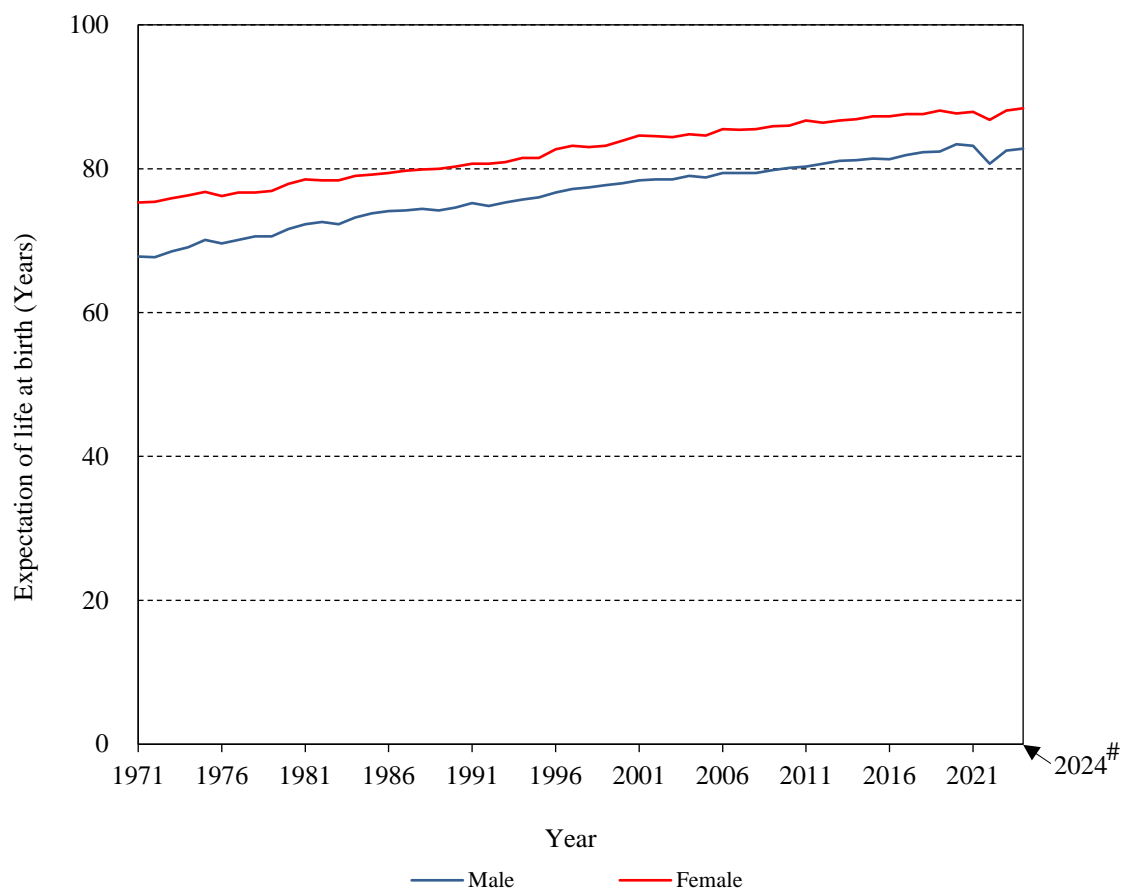
Infant mortality rate

The decline in death rate in the past 52 years was partly due to improvements in birth care and child health, which reduced deaths of infants. The relevant indicator to study the phenomenon is the infant mortality rate, which is obtained by dividing the number of deaths of infants aged under one year by the total number of live births. The rate is usually expressed in terms of deaths per 1 000 live births.

Chart 1.8   Infant mortality rate, 1971 – 2024
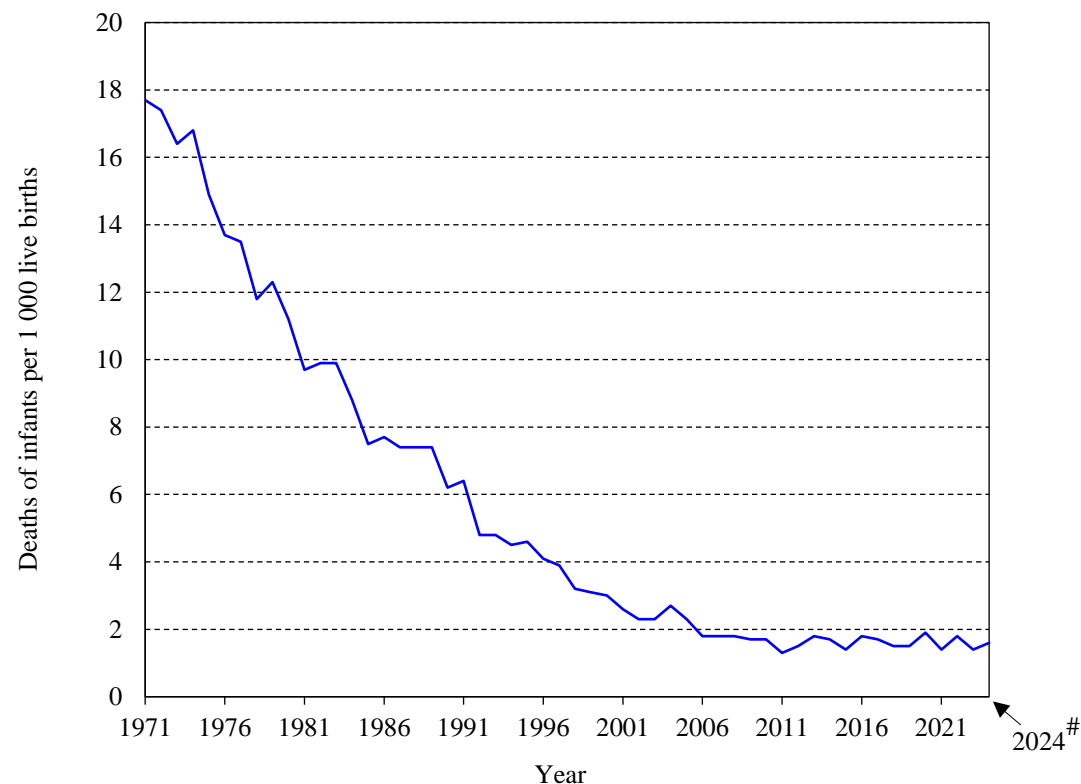
Better medical and health services

The general decline in death trend can also be associated with better medical and health services. Besides, people are having more knowledge about health and are more health conscious now.

Chart 1.9 **Rate of hospital beds and selected types of registered healthcare professionals, 1971 – 2024[5]**
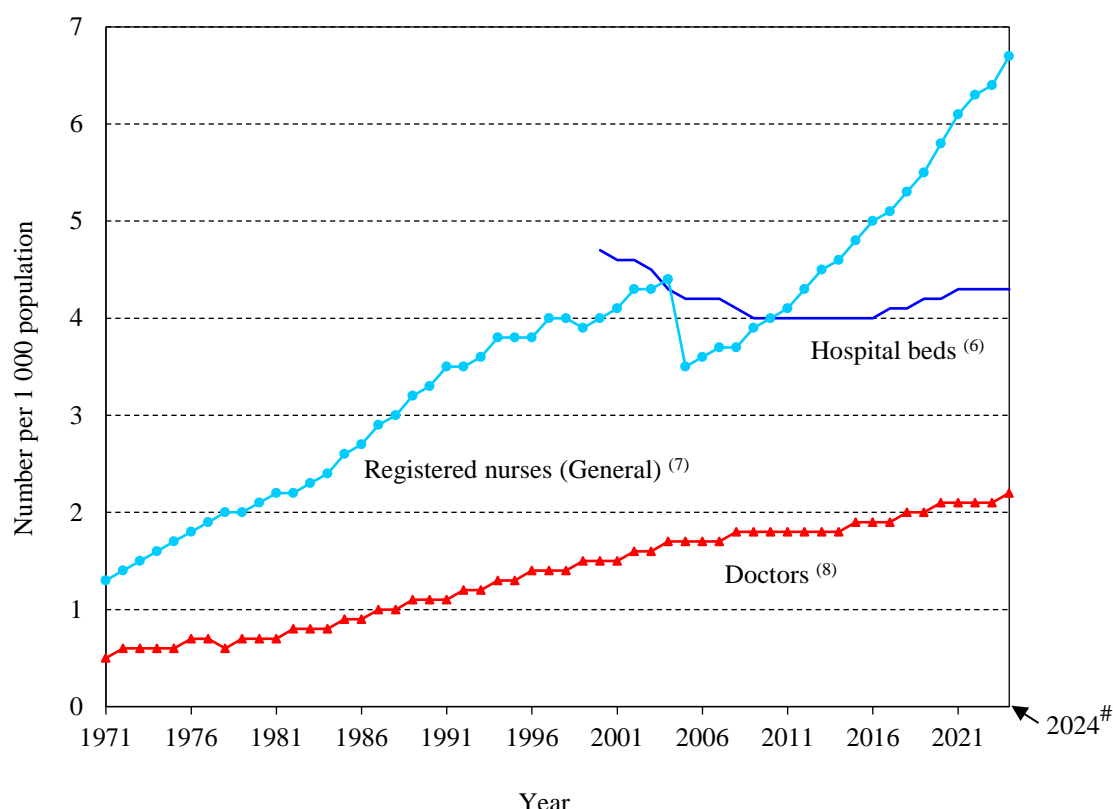
Notes :

(5) Figures are as at end of the year.

(6) Figures include only hospital beds in Hospital Authority hospitals and private hospitals excluding accident and emergency observation beds, day beds and nursery beds, which follow the definition of the Organisation for Economic Co-operation and Development (OECD). This series can only be available since 2000.

(7) The drop in 2005 was due to the removal of names of more than 6 000 registered nurses (General) from the register / roll in accordance with Section 7(3)(e) and Section 13(3)(e) of the Nurses Registration Ordinance, Cap. 164, Laws of Hong Kong.

(8) Figures refer to doctors with full registration on the local and overseas lists.

Movement of population

A substantial part of the Hong Kong population are entrants from the Mainland. Nevertheless, the locally born population remains the largest group.   This can be seen by comparing the proportion of the population by their place of birth.

Chart 1.10   Distribution of population by place of birth, 2001, 2011 and 2021[9]

6.6%

33.7%

59.7%

2001

7.4%

32.1%

60.5%

2011

8.4%

29.9%

61.7%

2021

☐ Hong Kong
☐ The mainland of China / Macao / Taiwan
☐ Elsewhere
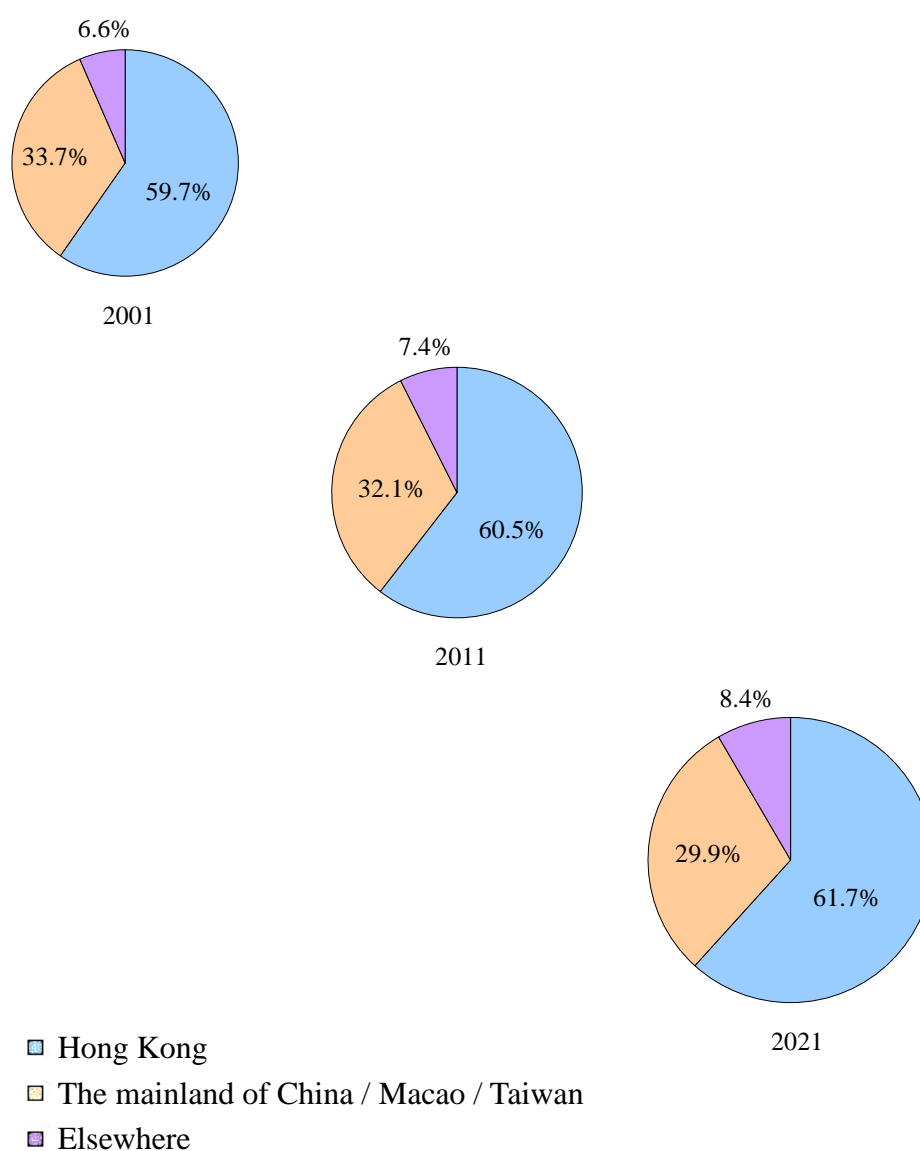
Note :
(9)   Statistics shown in the charts above refer to information collected via population censuses. Areas of the pie charts are proportional to the population sizes in the corresponding years.

Demographic transition model as a general pattern of population growth

The demographic transition model describes changes in birth and death rates as a population passes from a traditional society to an urbanised and industrialised one. Generally, birth and death rates are high in traditional societies and low in modern societies.   According to different rates of birth and death, changes in population are thought to occur in four stages:

(1)   high birth and death rates;
(2)   high birth rate and declining death rate;
(3)   declining birth and death rates; and
(4)   low birth and death rates.

Chart 1.11   Demographic transition model
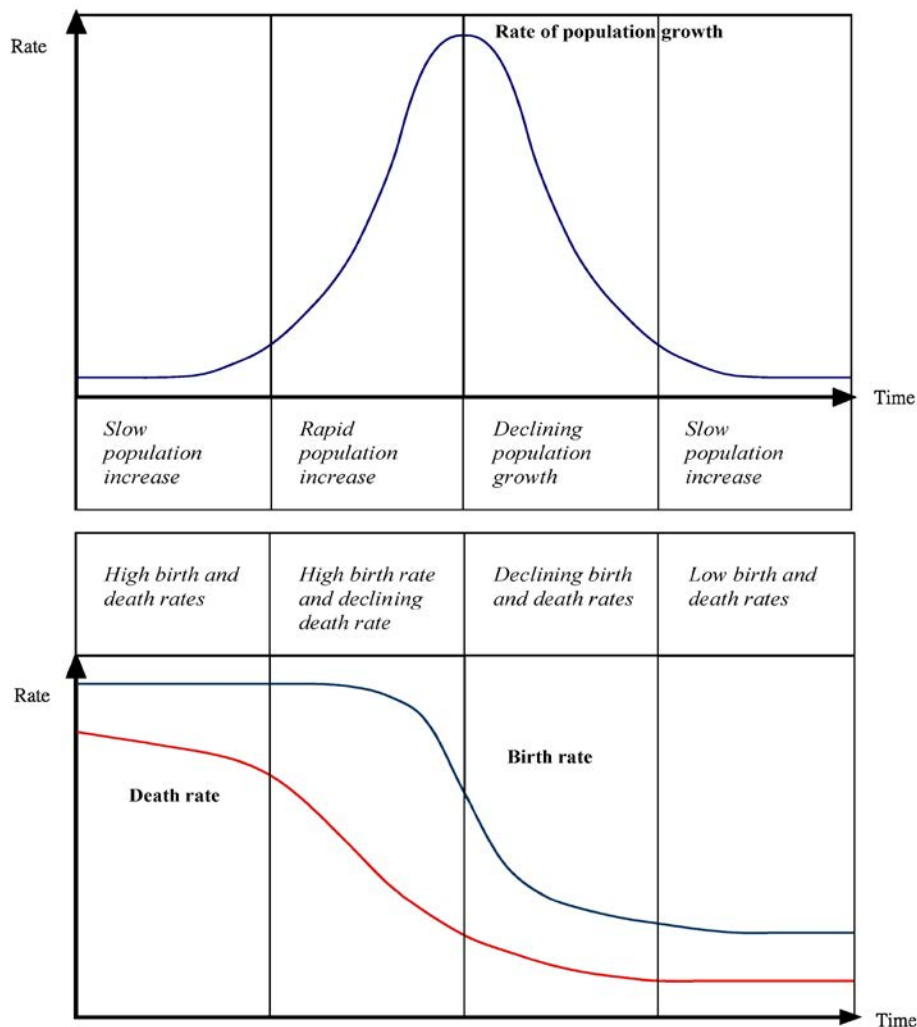
As the population grows naturally by excess of births over deaths, it would increase at varying speeds in these different stages.   This, of course, assumes that flows of movement are not significant.   Otherwise, rather different pictures can emerge.

Further information

The above contents present only part of the information produced by C&SD on the topics concerned.   For further information regarding the topics discussed in this chapter (e.g. latest statistics, statistical reports, concepts and methods), please visit the following sections of the C&SD website :

Population estimates
Population censuses and by-censuses
Demographics
Health

Interactive quiz

You may test the knowledge you have learnt in this Chapter by trying this interactive quiz.   Answers to the questions can be found in the relevant paragraphs of this Chapter.

Note :

^   Growth rates of the population, crude birth rate, crude death rate and rate of natural change are calculated based on unrounded population figures.

Exercise

Growth patterns of different countries

Births, deaths and net movements are the three factors affecting population growth. Annual growth rates, rates of natural change, crude birth rates and crude death rates are useful indicators of the growth pattern.

Readers may try to calculate these rates from the table below where data on population size, births and deaths are given for different countries.

The aim of this exercise is to enable readers to get familiarised with the fundamental concepts in population growth.

Generally speaking, the rate of natural change may be taken as the difference between the crude birth rate and the crude death rate.

To further test one's understanding of the demographic transition model as a general pattern of population growth, the second part of this exercise is to classify those countries into different transitional stages based on the birth and death rates computed in the first part.   There are no universal rules to classify such rates as high or low. However, as a practical guide, a crude birth rate of 25 per 1 000 population or above may be regarded as high; and a crude death rate of 15 per 1 000 population or above can be considered as high.

(1)   From the data given below, complete the table.
       (Figures are given in thousands; rates are expressed in "per 1 000 population".)

Country	Mid-year population at year T	No. of births in year T	No. of deaths in year T	Crude birth rate	Crude death rate	Rate of natural change
Country A	29 863	1 322	525			
Country B	15 941	723	332			
Country C	20 155	249	132			
Country D	32 268	332	226			
Country E	9 749	433	181			
Country F	1 315 844	17 558	8 795			
Country G	74 033	1 860	421			
Country H	1 517	51	17			
Country I	82 689	702	853			
Country J	10 098	96	132			

(2) From the rates obtained in part (1), classify the countries into various stages of the demographic transition model.

Stage (1) (High birth and death rates)	Stage (4) (Low birth and death rates)

2 Population structure

Introduction

Individuals differ in terms of their sex, age, employment, and so on.   A population, made up of individuals, is characterised by the distribution of individuals in regard to these features.   This chapter introduces various measures for describing population characteristics and their changes over time.

Population pyramid

The age-sex distribution of a population is most clearly presented in the graphical form of a "population pyramid".   The pyramid can be scaled in either population numbers or percentages.   The percentage distribution is more appropriate for comparison of two or more populations.

Chart 2.1   Population of Hong Kong by age and sex, mid-2024
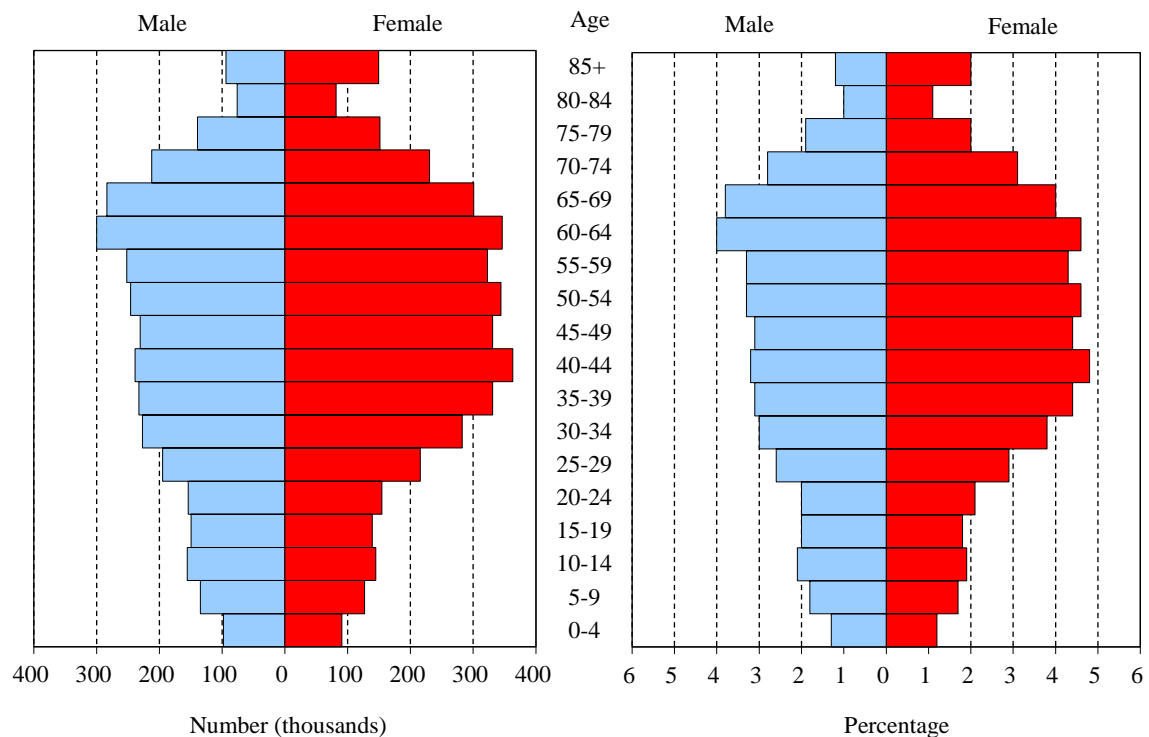
2 Population structure

The age-sex distribution reflects the combined effects of the past and recent trends in births, deaths and net movements.   It is a rather persistent feature, and will not change drastically in a short span of time.   Irregularities, like age or sex groups of exceptional size, reflect unusual numbers of births, deaths or net movements at some points of time in the past.   Normally, births and net movements have larger impacts on the age-sex distribution than deaths.

Chart 2.2   Age-sex distribution of Hong Kong population, mid-2024
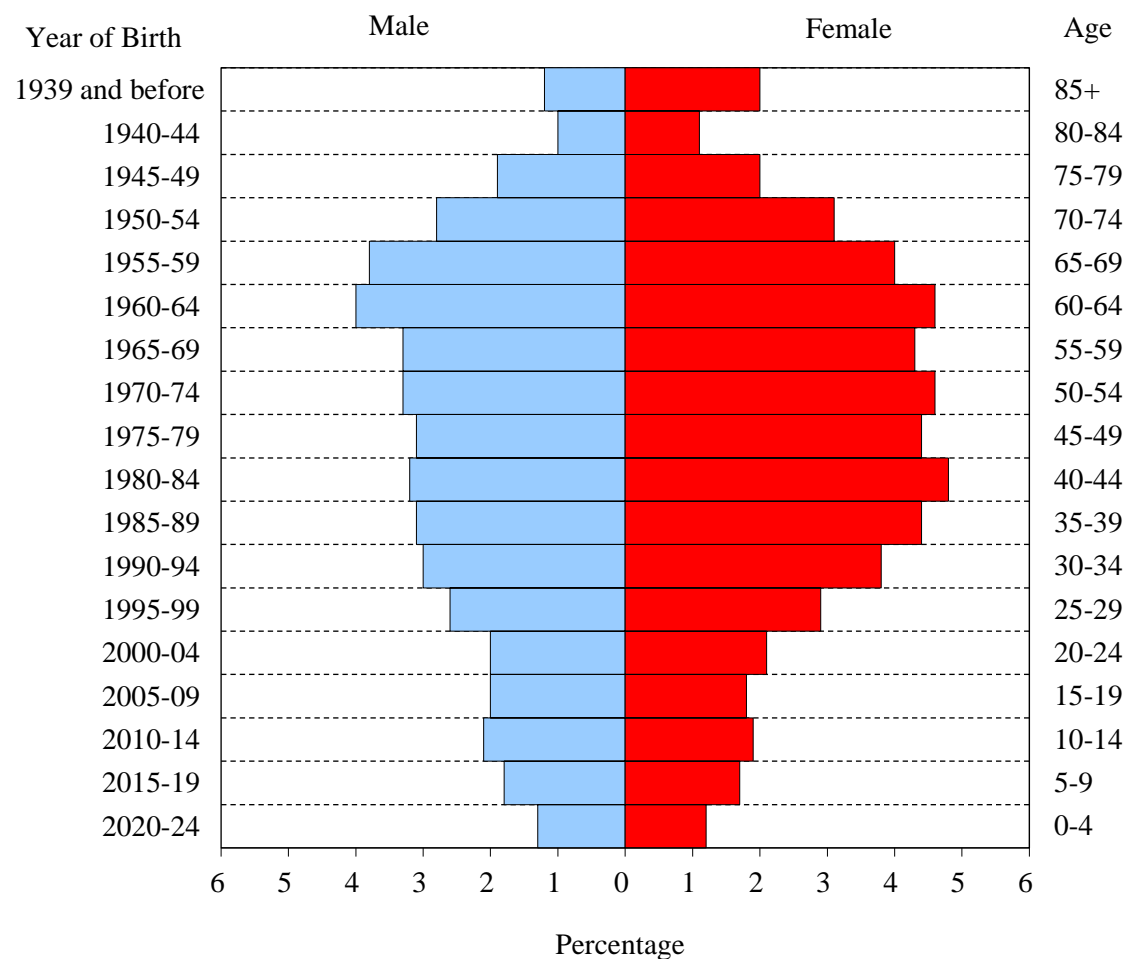
Shape of population pyramid in relation to the growth pattern of a population

In a growing population with high birth rates, the numbers of people in younger age groups are larger and the age structure would take on the shape of a typical pyramid. If death rates are also high, the pyramid, which has a broad base, would narrow rapidly towards the top.   Conversely, as the birth trend declines and the death trend improves, the pyramid would have a relatively narrow base and a middle section of nearly the same width; it does not begin to converge to the vertex until after very old age groups.

2 Population structure

Chart 2.3   Population pyramids (in percentage) of selected countries, 2024
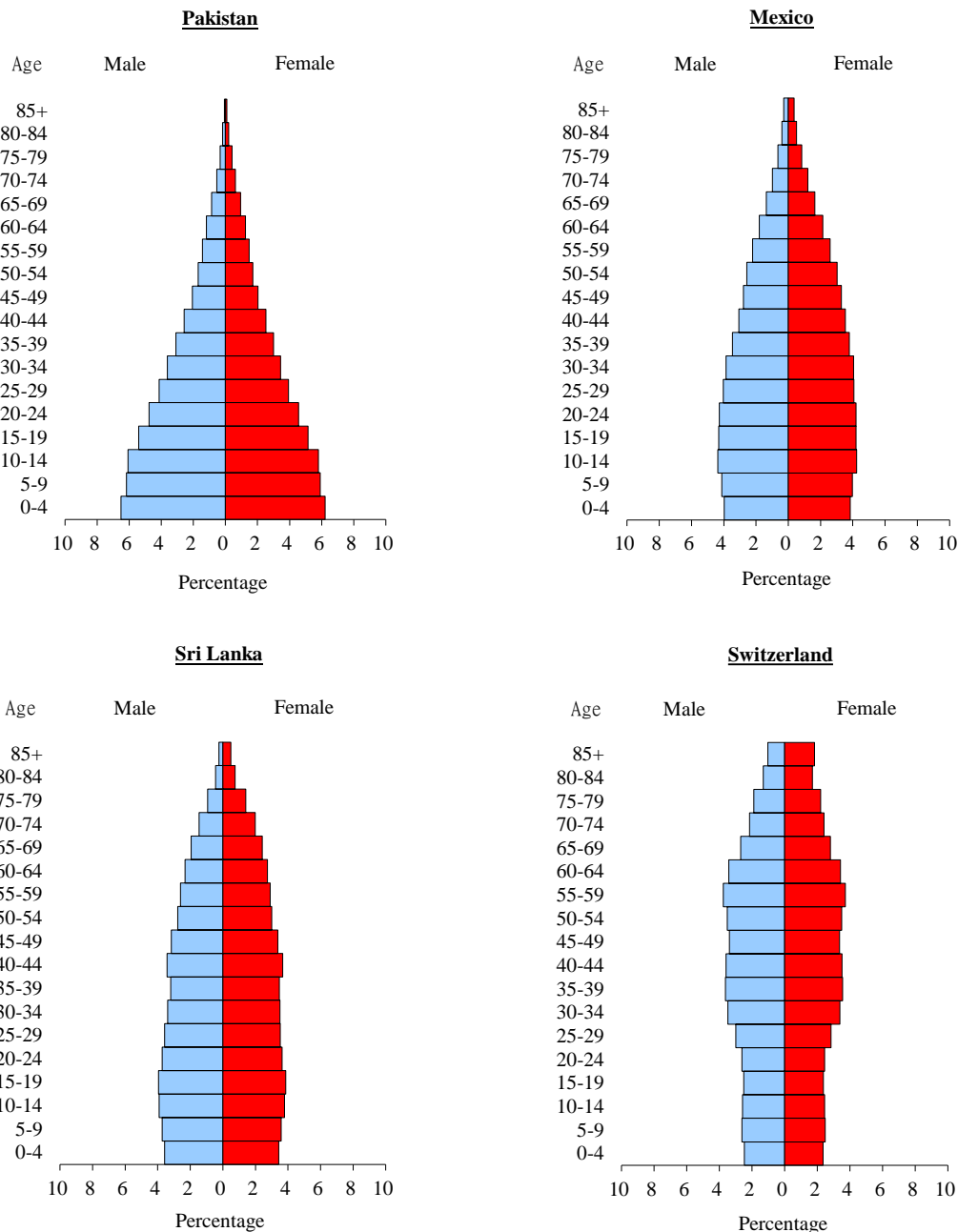
Source : *World Population Prospects : The Population Database*, Population Division of the United Nations Department of Economic and Social Affairs

The shape of a population pyramid is thus closely related to the growth pattern of a population.   Countries in different transitional stages may take on varying shapes of the population pyramid for their age-sex structures.   For instance, the pyramid for Pakistan (2024) has a very broad base that narrows upwards very rapidly.   It has almost a triangular shape.   It results from a very high crude birth rate of 27.4 per 1 000 population[1] and relatively low expectation of life at birth, 65.5 years[1] for males and 70.3 years[1] for females.

In contrast, the pyramid for Switzerland (2024) has a much narrower base, a little bit wider middle section and a slowly converging tip.   The shape is almost semi-elliptical. It illustrates the effects of a low crude birth rate of 9.3 per 1 000 population[1] and high expectation of life at birth, 82.2 years[1] for males and 85.9 years[1] for females.

The pyramids for Mexico (2024) and Sri Lanka (2024) illustrate configurations intermediate between those for Pakistan and Switzerland; their crude birth rates were 15.5 and 13.9 per 1 000 population[1] respectively and their respective expectations of life at birth were 72.4 and 74.4 years[1] for males and 78.0 and 80.7 years[1] for females.

Expectation of life at birth is preferred to crude death rate as an indicator of death trend here because the crude death rates for the four countries are found highly distorted by the different age structures of their populations.

Apart from the natural effect of births and deaths, it should be noted that these four pyramids are affected by other irregular variations and therefore may deviate from the theoretical triangular and semi-elliptical shapes that the demographic transition model prescribes.

Besides the detailed description of age-sex structure provided by the population pyramid, the age-sex distribution of a population can also be given by other summary measures.

Sex ratio

To compare the relative size of the male group and female group in the population, the sex ratio is calculated.   The ratio is obtained by dividing the number of males in the population by the number of females.   The sex ratio is usually expressed as the number of males per 1 000 females.

At mid-2024, there were 3 417 900 males and 4 106 200 females in Hong Kong. Thus the sex ratio was

$$\frac{3\ 417\ 900}{4\ 106\ 200} \times 1\ 000\ =\ 832$$

Or 832 males per 1 000 females.

Note :

(1)   Source : *World Population Prospects,* Population Division of the United Nations Department of Economic and Social Affairs

Sex ratio by age group

Sex ratio may also be calculated separately for various age groups.   For instance, the sex ratio at birth compares the number of male births to female births.   Usually, as a biological norm, slightly more male babies are born than female babies.

	Sex ratio (number of males per 1 000 females)		
Age group	Mid-2014	Mid-2019	Mid-2024
0-14	1 067	1 069	1 070
15-19	1 056	1 040	1 074
20-24	986	967	998
25-29	771	846	903
30-34	673	707	803
35-39	688	651	703
40-44	708	680	658
45-49	784	710	696
50-54	892	778	716
55-59	975	880	779
60-64	978	962	866
65 and over	874	879	881
All ages	**861**	**838**	**832**

Chart 2.4   Sex ratio of Hong Kong population by age group, mid-1961 to mid-2024
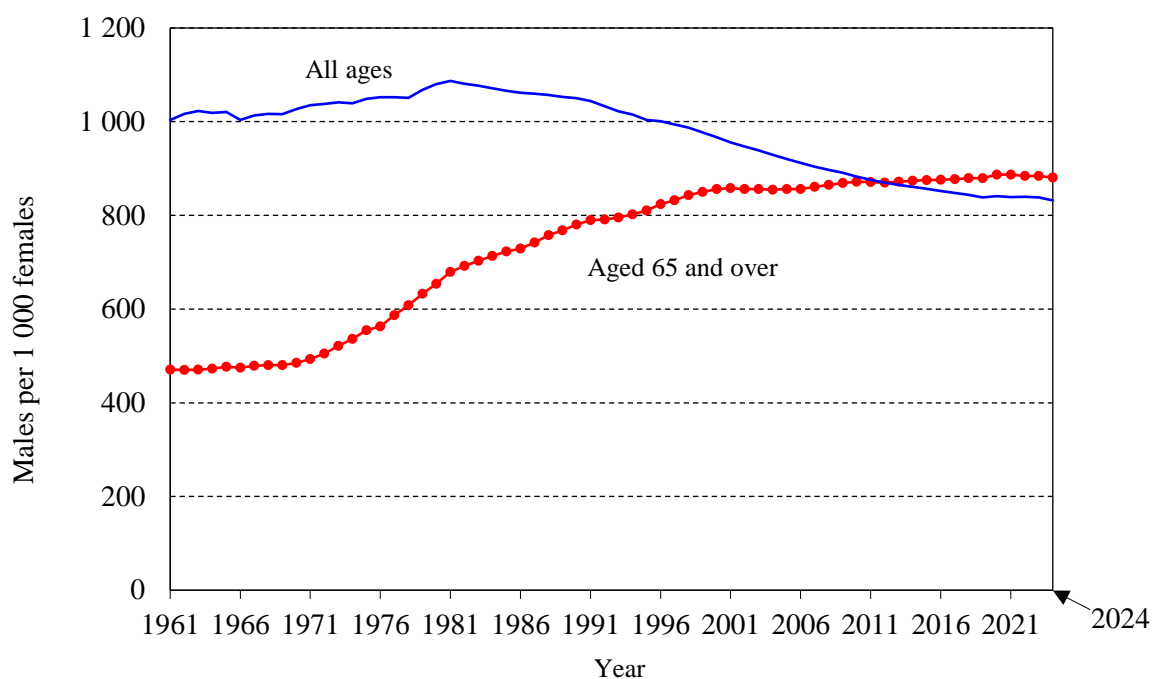
As revealed by the above chart, the sex ratio for the older ages was on the rise over the years. This reflects a greater improvement in the death trend for males than for females in recent years.

Increasing proportion of females in Hong Kong population

In Hong Kong, the proportion of females in the total Hong Kong population increased continuously in the past 10 years. The sex ratio of the population remained below parity and was consistently on a decreasing trend. The ratio dropped from 861 in mid-2014 to 832 in mid-2024.

The increase in the proportion of females in the population was brought about by three major factors.

Effect of foreign domestic helpers

Firstly, there was a significant number of foreign domestic helpers in Hong Kong, who were mostly young and middle-aged females. Owing to this factor, the number of females in the age group of 20-44 was relatively large, with the corresponding sex ratio at mid-2024 being 778 males per 1 000 females.

	Sex ratio (number of males per 1 000 females)		
Age group	Mid-2014	Mid-2019	Mid-2024
0-19	1 064	1 061	1 071
20-44	**749**	**747**	**778**
45-64	900	828	765
65 and over	874	879	881
All ages	861	838	832

After excluding foreign domestic helpers, the sex ratio for the age group of 20-44 at mid-2024 rose to 939. The sex ratio for the entire population was 905.

	Sex ratio excluding foreign domestic helpers (number of males per 1 000 females)		
Age group	Mid-2014	Mid-2019	Mid-2024
0-19	1 065	1 062	1 071
20-44	**904**	**905**	**939**
45-64	934	866	825
65 and over	874	879	883
All ages	935	910	905

2 Population structure

Effect of one-way permit holders from the Mainland

The second factor contributing to the increasing proportion of females in the population was that a large proportion of the one-way permit holders from the Mainland were women who came to Hong Kong to join their husbands.   In 2024, there were 39 958 one-way permit holders from the Mainland and about 56% of these new entrants were females.

Effect of higher expectation of life for females

The third factor is that females generally live longer than males.   The expectation of life at birth of females was 88.4[#] years while that for males was only 82.8[#] years in 2024.

Mean and median ages

To describe the age structure of a population, its average age can be used.   A simple average, or the "mean", can be obtained by dividing the sum of ages of the total population by the population size.   Alternatively, a measure is provided by the "median" age of the population.   Median age of the population is an indicator of the average age of the population such that 50% of the total population are above this age while the other 50% are below it.

Chart 2.5   Mean and median ages of Hong Kong population, mid-1961 to mid-2024
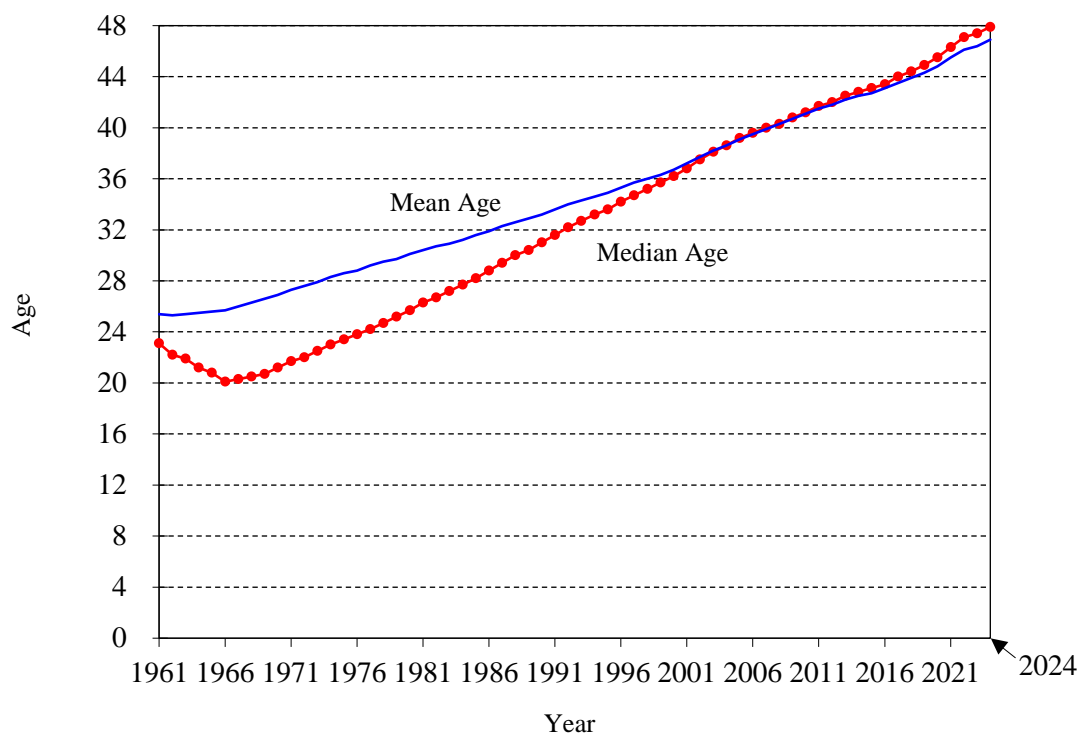
"Median" is normally a better measure of its average value in a set of data if there are extreme values, since the "mean" will be much affected by those extreme values. In the case of age, the general experience is that the median age is considered more preferable.

"Young" and "old" populations

A population may be described as "young" or "old".

A population may be considered as "ageing" when its median age is on the rise.

Dependency ratios

It is interesting and useful to divide the population into three groups by age, namely the young (i.e. those aged 0 to 14), those in the working age (i.e. aged 15 to 64) and the elderly (i.e. aged 65 and over) and study their relative sizes.

The overall dependency ratio is computed by dividing the number of the young and the elderly in the population by those in the working age. The components of this measure may be calculated separately as the "child dependency ratio" and "elderly dependency ratio".

Given the following population data for Hong Kong in mid-2024, the various dependency ratios are computed accordingly:

Age group	Population at mid-2024
0-14	750 800
15-64	5 054 400
65 and over	1 718 900

Child dependency ratio

$$= \frac{750\ 800}{5\ 054\ 400} \times 1\ 000 = \underline{\underline{149}}$$

or   149 persons aged under 15 per 1 000 population of working age.

2 Population structure

Elderly dependency ratio

$$= \frac{1\,718\,900}{5\,054\,400} \times 1\,000 = \underline{\underline{340}}$$

or   340 persons aged 65 and over per 1 000 population of working age.

Overall dependency ratio

$$= \frac{750\,800 + 1\,718\,900}{5\,054\,400} \times 1\,000 = \underline{\underline{489}}$$

or   489 persons aged under 15 or aged 65 and over per 1 000 population of working age.

Chart 2.6   Dependency ratios of Hong Kong population, mid-1961 to mid-2024
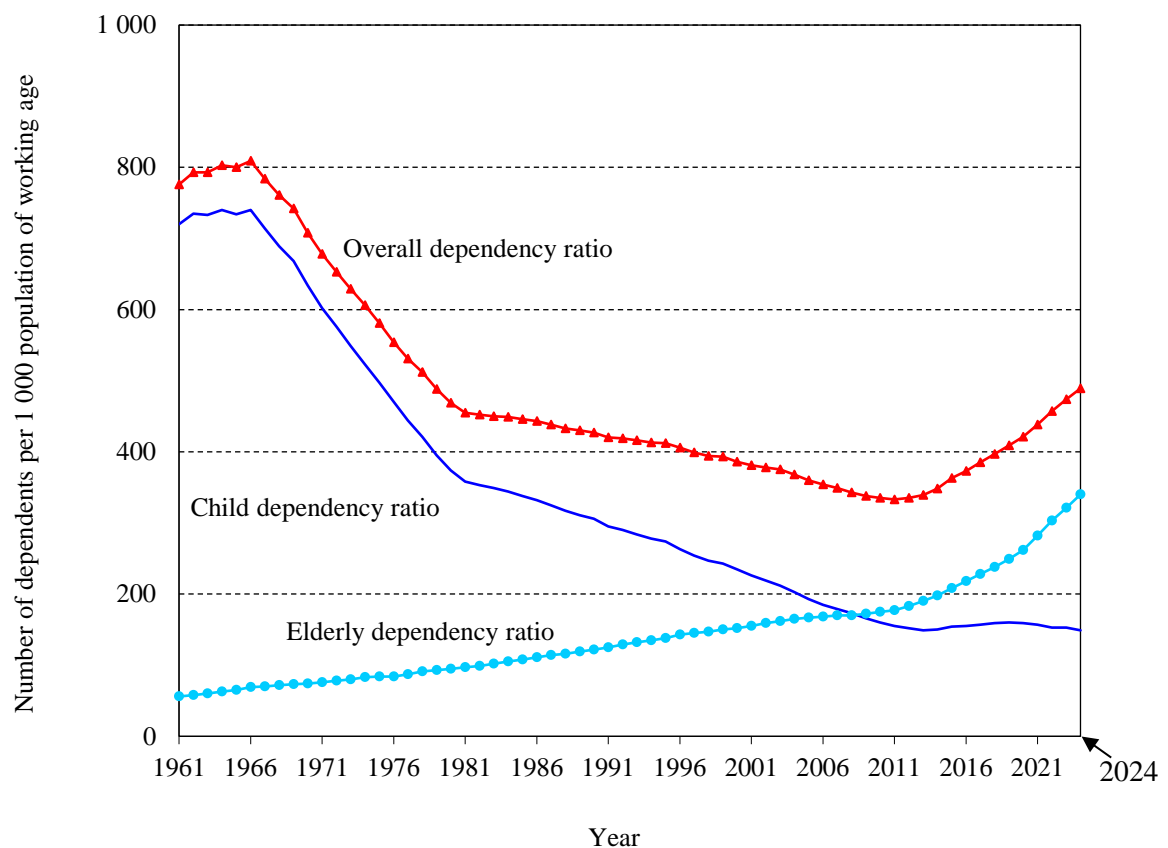
2 Population structure

Geographical distribution of the population

Hong Kong is delineated into 18 geographical districts: 4 on Hong Kong Island; 5 in Kowloon and 9 in the New Territories (including Islands). These geographical districts are called District Council districts. The numbers of people living in different districts vary considerably. Geographical distribution of the land-based non-institutional population is analysed in the ensuing paragraphs.

In 2024, 698 900 persons lived in Sha Tin.   It was the most populated district.   There were only 162 000 persons living in Wan Chai, which was the least populated district.

The proportion of the population living on Hong Kong Island decreased from 17.4% in 2014 to 15.6% in 2024 while the proportion living in the New Territories increased from 52.3% to 54.6%.   This change in the geographical distribution of the population reflects the effectiveness of the Government's policy in regard to the development of new towns in the New Territories.

Land-based non-institutional population by District Council district, 2024

District Council district	Land-based non-institutional population
Central and Western	229 400
Wan Chai	162 000
Eastern	514 400
Southern	254 700
Yau Tsim Mong	299 700
Sham Shui Po	432 300
Kowloon City	412 500
Wong Tai Sin	406 700
Kwun Tong	662 400
Kwai Tsing	491 600
Tsuen Wan	306 200
Tuen Mun	531 000
Yuen Long	671 100
North	338 400
Tai Po	327 900
Sha Tin	698 900
Sai Kung	498 200
Islands	195 300

2 Population structure

Employment structure of the population

"Economically active" persons are those aged 15 and over who are either working or seeking jobs.   These people make up the "labour force".   Children at school, the retired and home-makers are economically inactive persons.

The labour force of Hong Kong increased from 3.87 million in 2014 to 4.00 million in 2018, then decreased gradually to 3.78 million in 2022, and rebounded to 3.81 million in 2024.

"Labour force participation rates" are used to measure the proportion of economically active persons in the population aged 15 and over.   These rates are usually calculated separately for males and females in different age groups.   Since more women tend to concentrate on household duties, their labour force participation rates are generally lower than those for males.   The age specific labour force participation rates for males are highest at their prime working ages (i.e. 25 to 54) while the rates for females reach the peak at the age group 25-29 and decline gradually in the older age groups.

The labour force participation rates in the age groups 15-19 and 65 and over for both sexes in 2024 were substantially lower than those in other age groups, as most members of the former group were still at school while a fair proportion of those in the latter group were retired people.

Information on the labour force, employment, unemployment and underemployment is collected through the General Household Survey.

2 Population structure

The characteristics of foreign domestic helpers differ from those of the entire population, particularly in their labour force participation rates.   Because of this, the age-sex specific labour force participation rates presented in Chart 2.7 have excluded foreign domestic helpers in order to better reflect the profile of the local population.

Chart 2.7   Labour force participation rates of Hong Kong population (excluding foreign domestic helpers), 2024
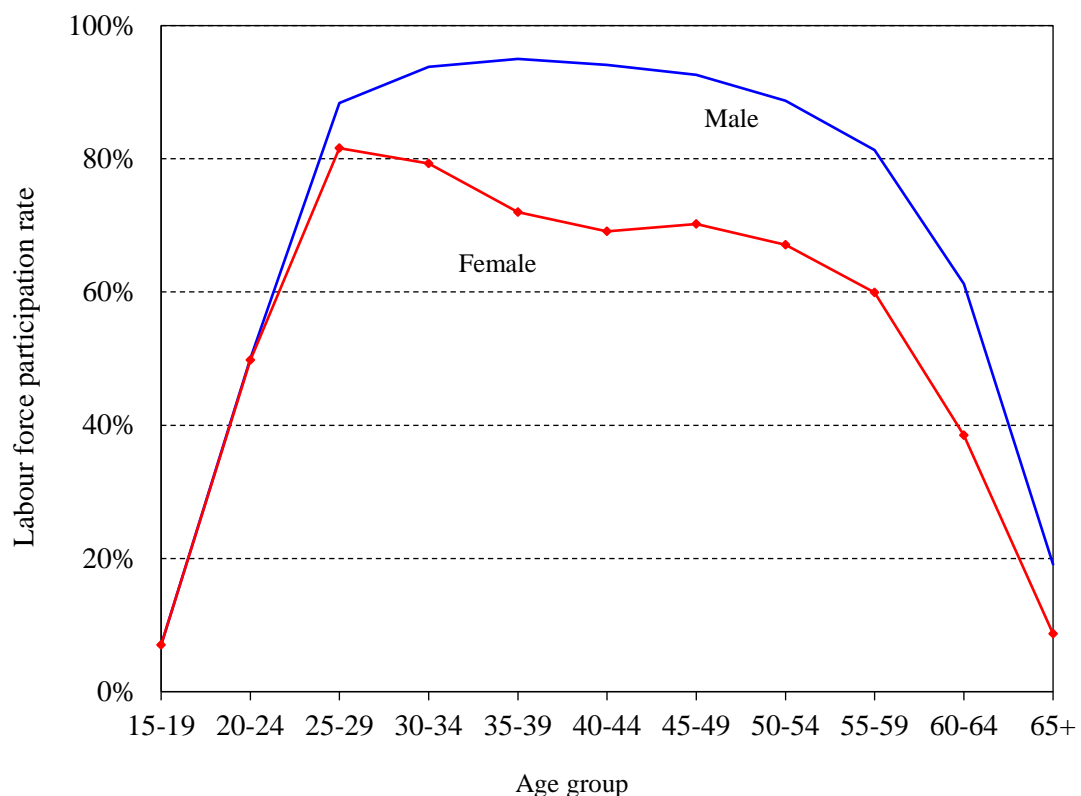
For employed persons who are working, their characteristics can be described in terms of the occupations and industries in which they are engaged.

Distribution of employed population by occupation

Occupation refers to the kind of work that a person does.   Examples are teachers, doctors, engineers, shop sales workers, security guards, knitting machine operators and clerks.

Chart 2.8 Distribution of employed population by occupation[2], 2014 – 2024

(a) Based on International Standard Classification of Occupations 2008 (ISCO-08) (occupation classification adopted prior to the revision in January to March 2022)
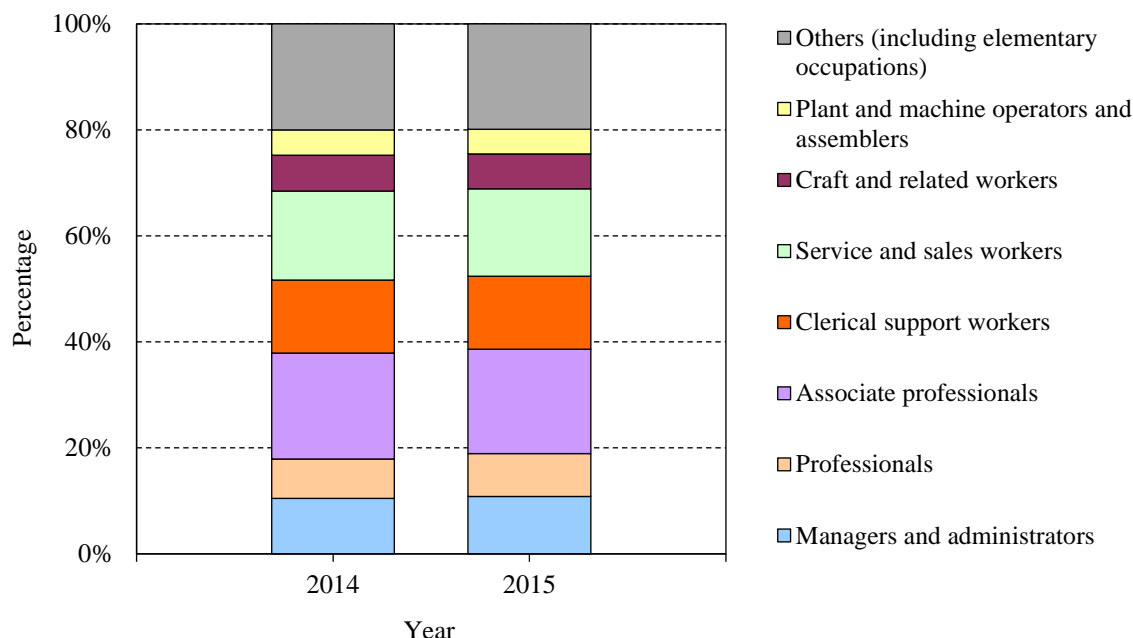
(b) Based on International Standard Classification of Occupations 2008 (ISCO-08)
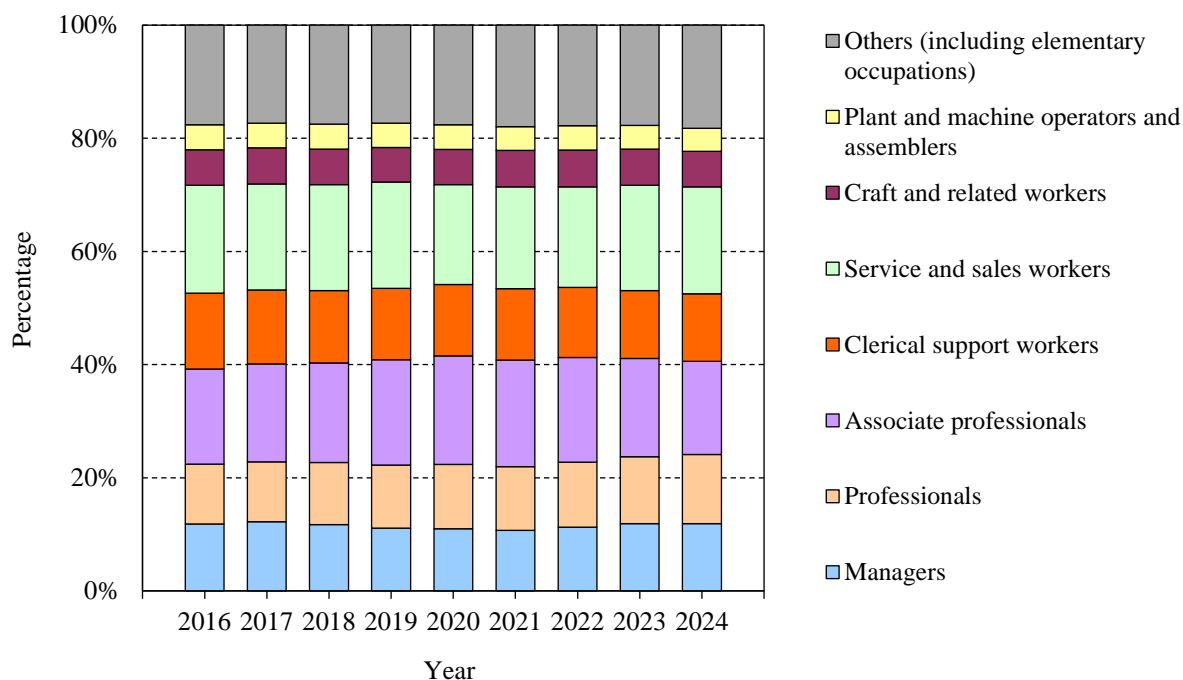
Note :

(2) From 2011 onwards, the classification of occupations is broadly modelled on the International Standard Classification of Occupations 2008 (ISCO-08). The occupation classification scheme has been enhanced since January to March 2022 to follow the ISCO-08 more closely, with statistics backcasted to the quarter of January to March 2016. Starting from the reference quarter of January to March 2016, all the labour force statistics by occupation, unless otherwise specified, are compiled based on the revised occupation classification scheme. Figures under different classifications are not directly comparable.

Distribution of employed population by industry sector

Industry, on the other hand, refers to the kind of activity carried out by the establishment or enterprise in which a person works. Examples of some establishments are schools, hospitals, shops, construction firms and factories. Examples of "industries" are business services sector, retail sector, construction sector, transportation sector and manufacturing sector.

The economic characteristics of a population reflect the stage of the society's economic development. In general, the labour force tends to shift away from agriculture to manufacturing industries, and then to services industries.

In Hong Kong, the economic characteristics of the population follow this general pattern in economic development. Over these years, the services sector in Hong Kong has been gaining increasing prominence.

Being the industry sector with the largest share of employment, the services sector as a whole engaged 3.3 million persons in 2024, accounting for 87.9% of the overall employment. The corresponding figures for 2019 were 3.4 million persons and 88.6%.

Chart 2.9   Distribution of employed population by industry[3], 2014 – 2024

Based on Hong Kong Standard Industrial Classification (HSIC)

Legend:
- Other industries
- Public administration, social and personal services
- Financing, insurance, real estate, professional and business services
- Transportation, storage, postal and courier services, information and communications
- Retail, accommodation and food services [4]
- Import / export trade and wholesale
- Construction
- Manufacturing
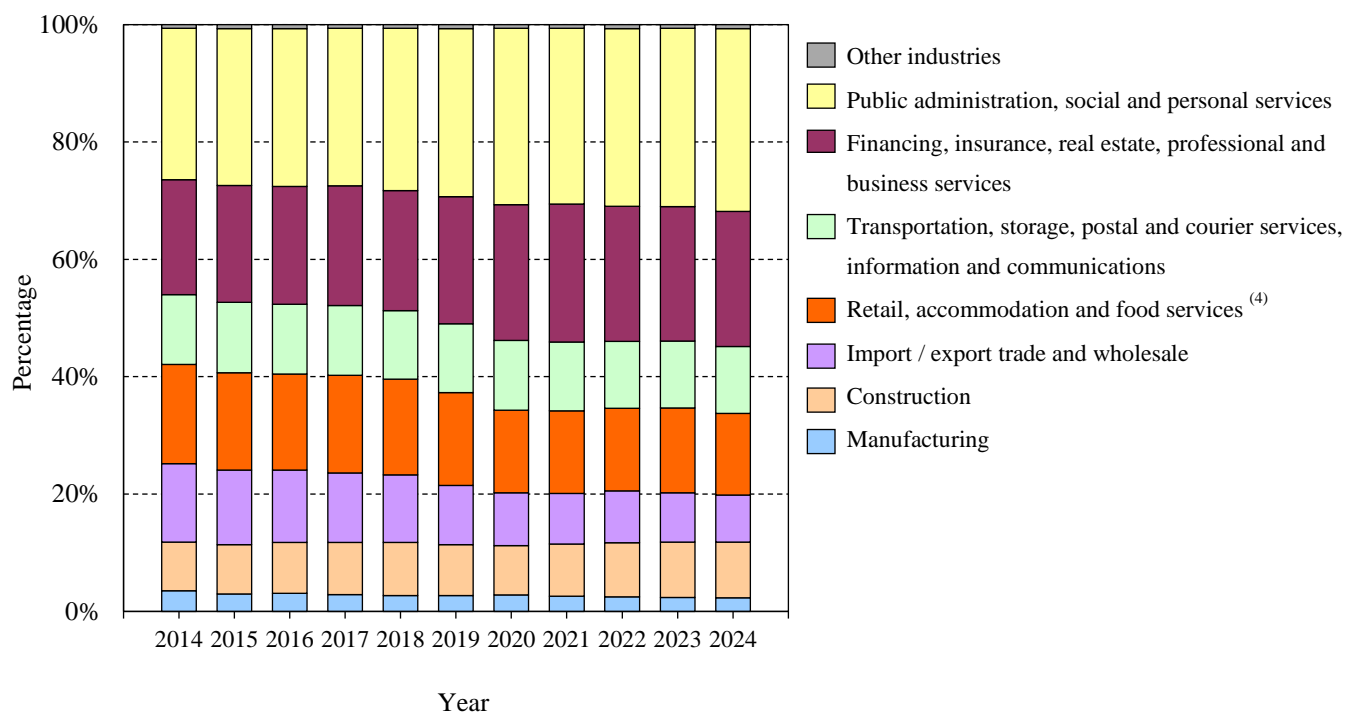
Notes :

(3)   Figures are compiled based on Hong Kong Standard Industrial Classification Version 2.0.

(4)   The retail, accommodation and food services industries as a whole is generally referred to as the consumption- and tourism-related segment.

2 Population structure

Further information

The above contents present only part of the information produced by C&SD on the topics concerned. For further information regarding the topics discussed in this chapter (e.g. latest statistics, statistical reports, concepts and methods), please visit the following sections of the C&SD website :

Population estimates
Population censuses and by-censuses
Demographics
Labour force, employment and unemployment

Interactive quiz

You may test the knowledge you have learnt in this Chapter by trying this interactive quiz.   Answers to the questions can be found in the relevant paragraphs of this Chapter.

2 Population structure

Exercise

Age-sex structure of the 18 districts

Population pyramid is a useful tool to depict the age-sex structure of a population.

This exercise demonstrates how to present age-sex data by means of population pyramids.   It further shows how age-sex structure differs in different districts of Hong Kong, which has implications for the requirement for social services and facilities in these districts.

(1)   With reference to the age-sex data obtained from the 2021 Population Census for the 18 districts shown on pages 42 to 44, please prepare a population pyramid for each of these districts on graph papers according to the formats given on pages 45 to 47.

(2)   Please rank the 18 districts according to their ageing extent, by referring to the median age of the district populations.

District Council district	Median age	Ranking for ageing extent [Note] ("1" for the most aged district)
Central and Western	44.8	
Wan Chai	46.0	
Eastern	49.0	
Southern	48.1	
Yau Tsim Mong	44.0	
Sham Shui Po	46.2	
Kowloon City	45.4	
Wong Tai Sin	50.1	
Kwun Tong	48.0	
Kwai Tsing	48.0	
Tsuen Wan	45.4	
Tuen Mun	46.1	
Yuen Long	43.7	
North	46.3	
Tai Po	45.7	
Sha Tin	46.2	
Sai Kung	44.7	
Islands	42.7	

Note :   Where there are ties in rank, the tied observations are assigned the mean of the ranks which they jointly occupy.

2 Population structure

(3) With reference to the statistics shown on pages 42 to 44, please analyse how various districts may differ in their requirements for public services and facilities.

Percentage distribution of population by age and sex, June 2021

	Central and Western			Wan Chai			Eastern		
Age group	Male	Female	Total	Male	Female	Total	Male	Female	Total
0-4	1.6	1.6	3.2	1.5	1.5	3.1	1.4	1.3	2.6
5-9	1.8	1.9	3.6	1.8	1.8	3.6	1.8	1.7	3.5
10-14	1.7	1.7	3.5	1.7	1.8	3.5	1.9	1.7	3.6
15-19	1.5	1.5	3.0	1.4	1.4	2.7	1.6	1.6	3.2
20-24	1.9	2.3	4.1	1.5	1.7	3.2	1.9	1.8	3.7
25-29	2.5	4.2	6.7	2.0	3.7	5.7	2.5	2.9	5.5
30-34	2.9	5.5	8.4	2.6	5.4	8.1	2.6	3.7	6.3
35-39	3.1	6.2	9.3	3.0	6.8	9.7	2.8	4.7	7.6
40-44	3.2	5.4	8.6	2.9	5.9	8.8	3.0	4.9	7.9
45-49	3.1	4.9	8.0	3.1	5.2	8.3	3.2	4.7	7.9
50-54	3.0	4.6	7.6	3.1	4.7	7.8	3.2	4.5	7.7
55-59	3.4	4.4	7.7	3.2	4.3	7.5	3.8	4.8	8.7
60-64	3.3	3.7	7.0	3.0	3.7	6.8	4.0	4.6	8.6
65-69	2.9	3.2	6.2	2.7	3.2	5.9	3.4	3.8	7.2
70-74	2.4	2.6	5.0	2.6	3.0	5.5	2.9	3.2	6.1
75-79	1.1	1.2	2.4	1.3	1.5	2.8	1.5	1.6	3.1
80-84	1.0	1.2	2.2	1.3	1.5	2.8	1.3	1.5	2.8
85+	1.4	2.3	3.6	1.6	2.6	4.2	1.5	2.7	4.1
All ages	41.7	58.3	100.0	40.2	59.8	100.0	44.1	55.9	100.0
Median age			44.8			46.0			49.0

	Southern			Yau Tsim Mong			Sham Shui Po		
Age group	Male	Female	Total	Male	Female	Total	Male	Female	Total
0-4	1.4	1.4	2.7	2.0	1.9	3.8	1.7	1.5	3.2
5-9	1.9	1.9	3.8	2.1	2.1	4.2	2.2	2.0	4.2
10-14	2.0	1.9	3.8	1.9	1.8	3.7	2.1	1.9	4.1
15-19	1.7	1.6	3.3	1.5	1.6	3.1	1.8	1.8	3.6
20-24	2.0	1.8	3.8	2.1	2.3	4.4	2.4	2.2	4.6
25-29	2.4	2.9	5.3	2.7	3.8	6.4	2.8	3.2	6.0
30-34	2.5	3.9	6.3	3.2	5.0	8.3	3.0	3.9	6.9
35-39	2.8	5.0	7.8	3.4	5.5	8.9	3.2	4.6	7.8
40-44	3.0	5.1	8.1	3.4	5.4	8.9	3.1	4.7	7.8
45-49	3.4	4.9	8.3	3.6	5.1	8.7	3.3	4.6	7.9
50-54	3.5	4.6	8.1	3.4	4.3	7.8	3.4	4.5	7.9
55-59	4.0	4.8	8.8	3.5	4.0	7.5	3.7	4.3	8.0
60-64	3.9	4.3	8.2	3.3	3.2	6.5	3.8	3.9	7.6
65-69	3.2	3.5	6.8	2.9	2.8	5.6	3.2	3.4	6.6
70-74	2.6	2.8	5.4	2.2	2.4	4.6	2.4	2.6	5.0
75-79	1.3	1.5	2.8	1.2	1.3	2.5	1.3	1.4	2.7
80-84	1.2	1.4	2.6	1.0	1.1	2.2	1.2	1.3	2.4
85+	1.5	2.6	4.1	1.2	1.8	3.0	1.4	2.3	3.7
All ages	44.2	55.8	100.0	44.7	55.3	100.0	45.9	54.1	100.0
Median age			48.1			44.0			46.2

Percentage distribution of population by age and sex, June 2021 (cont'd)

Age group	Kowloon City Male	Female	Total	Wong Tai Sin Male	Female	Total	Kwun Tong Male	Female	Total
0-4	1.7	1.6	3.3	1.2	1.1	2.3	1.3	1.2	2.5
5-9	2.3	2.2	4.5	1.6	1.5	3.1	1.9	1.7	3.7
10-14	2.3	2.2	4.5	1.8	1.7	3.5	2.2	2.0	4.2
15-19	1.8	1.7	3.6	1.9	1.8	3.7	2.1	2.0	4.1
20-24	1.9	2.1	4.0	2.4	2.2	4.5	2.5	2.3	4.8
25-29	2.4	3.3	5.7	3.1	3.2	6.2	3.0	3.0	6.0
30-34	2.8	4.4	7.2	2.9	3.2	6.2	2.8	3.3	6.1
35-39	2.9	5.3	8.2	2.7	3.7	6.4	2.8	3.9	6.7
40-44	3.0	5.4	8.5	2.7	3.9	6.6	2.9	4.2	7.2
45-49	3.4	5.1	8.5	3.0	4.3	7.3	3.4	4.6	8.0
50-54	3.3	4.3	7.7	3.5	4.7	8.2	3.5	4.6	8.1
55-59	3.3	4.1	7.5	4.4	5.3	9.7	4.0	4.7	8.7
60-64	3.4	3.6	6.9	4.5	4.7	9.3	3.9	4.1	8.0
65-69	2.8	3.1	5.9	3.4	3.7	7.1	3.1	3.6	6.7
70-74	2.3	2.6	4.9	2.5	2.8	5.3	2.5	2.9	5.4
75-79	1.3	1.6	2.9	1.5	1.7	3.1	1.6	1.7	3.3
80-84	1.2	1.4	2.6	1.3	1.6	2.9	1.4	1.5	2.9
85+	1.4	2.3	3.7	1.6	2.9	4.5	1.4	2.3	3.7
All ages	43.7	56.3	100.0	46.1	53.9	100.0	46.4	53.6	100.0
Median age			45.4			50.1			48.0

Age group	Kwai Tsing Male	Female	Total	Tsuen Wan Male	Female	Total	Tuen Mun Male	Female	Total
0-4	1.4	1.3	2.7	1.9	1.7	3.6	1.6	1.6	3.2
5-9	1.8	1.7	3.6	2.2	2.1	4.3	2.0	1.8	3.8
10-14	1.9	1.8	3.7	2.0	1.9	3.9	1.9	1.8	3.7
15-19	2.0	1.9	3.9	1.8	1.8	3.5	1.8	1.6	3.4
20-24	2.4	2.2	4.7	2.1	2.0	4.1	2.2	2.0	4.2
25-29	3.0	3.0	6.0	2.8	3.2	6.0	3.1	3.2	6.3
30-34	3.1	3.5	6.5	3.0	4.0	7.0	3.5	3.8	7.3
35-39	3.1	4.0	7.1	3.2	4.9	8.1	3.6	4.6	8.1
40-44	3.0	4.1	7.2	3.4	5.3	8.6	3.7	4.6	8.4
45-49	3.5	4.4	7.9	3.8	4.9	8.7	3.2	4.1	7.3
50-54	3.5	4.4	8.0	3.6	4.3	7.9	3.0	4.3	7.3
55-59	3.7	4.6	8.3	3.8	4.5	8.3	3.9	4.7	8.7
60-64	4.1	4.3	8.4	3.8	3.9	7.7	4.4	4.7	9.1
65-69	3.3	3.7	7.0	2.9	3.1	6.0	3.7	4.0	7.7
70-74	2.6	3.0	5.6	2.1	2.3	4.5	2.8	2.6	5.4
75-79	1.7	1.8	3.5	1.3	1.4	2.7	1.4	1.1	2.5
80-84	1.4	1.3	2.7	1.0	1.1	2.2	0.9	0.8	1.8
85+	1.3	2.0	3.2	1.1	1.7	2.8	0.8	1.2	2.0
All ages	46.8	53.2	100.0	45.7	54.3	100.0	47.4	52.6	100.0
Median age			48.0			45.4			46.1

Percentage distribution of population by age and sex, June 2021 (cont'd)

Age group	Yuen Long Male	Yuen Long Female	Yuen Long Total	North Male	North Female	North Total	Tai Po Male	Tai Po Female	Tai Po Total
0-4	1.9	1.8	3.6	1.5	1.5	3.1	1.7	1.6	3.3
5-9	2.1	1.9	4.0	2.0	1.7	3.7	2.0	1.9	4.0
10-14	2.0	1.9	3.9	2.1	2.0	4.1	1.8	1.8	3.6
15-19	2.0	1.8	3.8	2.0	2.0	4.1	1.6	1.6	3.2
20-24	2.5	2.5	5.1	2.4	2.4	4.9	2.1	2.1	4.1
25-29	3.6	3.8	7.3	3.2	3.3	6.5	2.9	3.3	6.3
30-34	3.6	4.3	7.9	3.5	3.8	7.3	3.6	4.4	8.0
35-39	3.5	4.8	8.3	3.3	4.4	7.7	3.6	5.1	8.7
40-44	3.4	4.7	8.0	2.8	4.2	7.0	3.3	4.6	7.8
45-49	3.1	4.5	7.6	2.7	4.2	6.9	3.0	4.0	7.0
50-54	3.2	4.6	7.8	3.1	4.6	7.7	2.8	3.9	6.7
55-59	4.1	4.9	9.0	4.3	5.0	9.3	3.8	5.0	8.8
60-64	4.5	4.1	8.6	5.0	4.9	9.9	4.8	5.2	10.0
65-69	3.1	2.8	6.0	3.8	3.4	7.2	3.8	3.7	7.5
70-74	2.0	1.8	3.9	2.5	2.0	4.4	2.5	2.2	4.6
75-79	1.0	0.9	1.9	1.1	1.0	2.1	1.1	1.1	2.2
80-84	0.7	0.7	1.4	0.8	0.9	1.7	0.8	0.9	1.7
85+	0.7	1.2	1.9	0.9	1.7	2.5	0.9	1.6	2.5
All ages	47.0	53.0	100.0	46.9	53.1	100.0	46.1	53.9	100.0
Median age			43.7			46.3			45.7

Age group	Sha Tin Male	Sha Tin Female	Sha Tin Total	Sai Kung Male	Sai Kung Female	Sai Kung Total	Islands Male	Islands Female	Islands Total
0-4	1.5	1.4	2.9	1.8	1.7	3.5	1.8	1.9	3.8
5-9	2.2	2.1	4.3	2.1	2.0	4.0	2.3	2.4	4.7
10-14	2.2	2.0	4.2	2.0	1.9	4.0	2.2	2.2	4.4
15-19	1.8	1.7	3.5	1.9	1.7	3.6	2.1	2.0	4.1
20-24	2.1	2.1	4.2	2.3	2.2	4.6	2.6	2.4	5.0
25-29	2.8	3.1	5.9	3.0	3.5	6.5	3.0	3.5	6.5
30-34	2.9	3.8	6.8	3.3	4.5	7.8	3.3	4.7	8.0
35-39	3.3	4.8	8.1	3.3	5.2	8.5	3.3	5.4	8.8
40-44	3.4	4.8	8.3	3.2	4.8	8.0	3.3	5.0	8.3
45-49	3.3	4.5	7.7	3.4	4.9	8.3	3.3	4.8	8.1
50-54	3.0	4.2	7.2	3.6	4.7	8.4	3.4	4.4	7.8
55-59	3.7	4.6	8.3	4.0	4.9	8.9	3.9	4.5	8.4
60-64	4.1	4.5	8.6	4.0	4.1	8.2	3.7	3.8	7.5
65-69	3.4	3.8	7.2	3.0	3.0	6.0	2.8	2.7	5.5
70-74	2.7	2.8	5.5	2.1	2.1	4.2	2.2	1.8	4.0
75-79	1.3	1.3	2.6	1.0	1.1	2.1	1.0	1.0	2.0
80-84	1.0	1.0	2.1	0.8	0.9	1.6	0.8	0.7	1.4
85+	1.0	1.6	2.6	0.7	1.2	1.9	0.8	1.1	1.9
All ages	45.9	54.1	100.0	45.6	54.4	100.0	45.9	54.1	100.0
Median age			46.2			44.7			42.7

Note : Figures may not add up to the total due to rounding.

2 Population structure

Age Group
Central and Western

Percentage
-8 -6 -4 -2 0 2 4 6 8

Age Group
Wan Chai

Percentage
-8 -6 -4 -2 0 2 4 6 8

Age Group
Eastern

Percentage
-8 -6 -4 -2 0 2 4 6 8

Age Group
Southern

Percentages
-8 -6 -4 -2 0 2 4 6 8

Age Group
Yau Tsim Mong

Percentage
-8 -6 -4 -2 0 2 4 6 8

Age Group
Sham Shui Po

Percentage
-8 -6 -4 -2 0 2 4 6 8

2   Population structure

Age Group — Kowloon City

Age Group — Wong Tai Sin

Percentage

Percentage

Age Group — Kwun Tong

Age Group — Kwai Tsing

Percentage

Percentage

Age Group — Tsuen Wan

Age Group — Tuen Mun

Percentage

Percentage

2   Population structure

Age Group   Yuen Long

-8   -6   -4   -2   0   2   4   6   8
                        Percentage

Age Group   North

-8   -6   -4   -2   0   2   4   6   8
                        Percentage

Age Group   Tai Po

-8   -6   -4   -2   0   2   4   6   8
                        Percentage

Age Group   Sha Tin

-8   -6   -4   -2   0   2   4   6   8
                        Percentage

Age Group   Sai Kung

-8   -6   -4   -2   0   2   4   6   8
                        Percentage

Age Group   Islands

-8   -6   -4   -2   0   2   4   6   8
                        Percentage

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3 Impact of changes in population and its structure on society

Introduction

This chapter discusses the impact of changes in population and its structure on society. It shows how statistical data can be used to identify the problems caused by population growth.   Population control and forward planning of service requirements are the solutions to these problems.   To carry out such work, population data of good quality are required.

The current population of the world as at 2025 is estimated to be around 8.2 billion by the United Nations Population Division, being mainly a result of an unprecedented growth of population in the 20th century.   This very large population size has caused much concern about the availability of resources to meet the demand of all the people for food, clothing, housing, education, medical services, etc.

The great burden from rapid population growth is likely to persist in the near future. Latest population projections indicate that by 2100, the world population will increase to 10.2 billion.   In particular, population problems will be more serious in some poorer areas or countries where populations grow faster than in more developed regions.

3 Impact of changes in population and its structure on society

Chart 3.1   **Distribution of world population by major area, 1950, 2024 and 2100[1], [2], [3]**

1950

- Africa 9.1%
- Europe 22.0%
- Northern America 6.7%
- Latin America 6.7%
- Oceania 0.5%
- Asia 54.9%

2024

- Africa 18.6%
- Europe 9.1%
- Northern America 4.7%
- Latin America 8.1%
- Oceania 0.6%
- Asia 58.9%

2100
(Projected)

- Africa 37.5%
- Europe 5.8%
- Northern America 4.7%
- Latin America 6.0%
- Oceania 0.7%
- Asia 45.3%
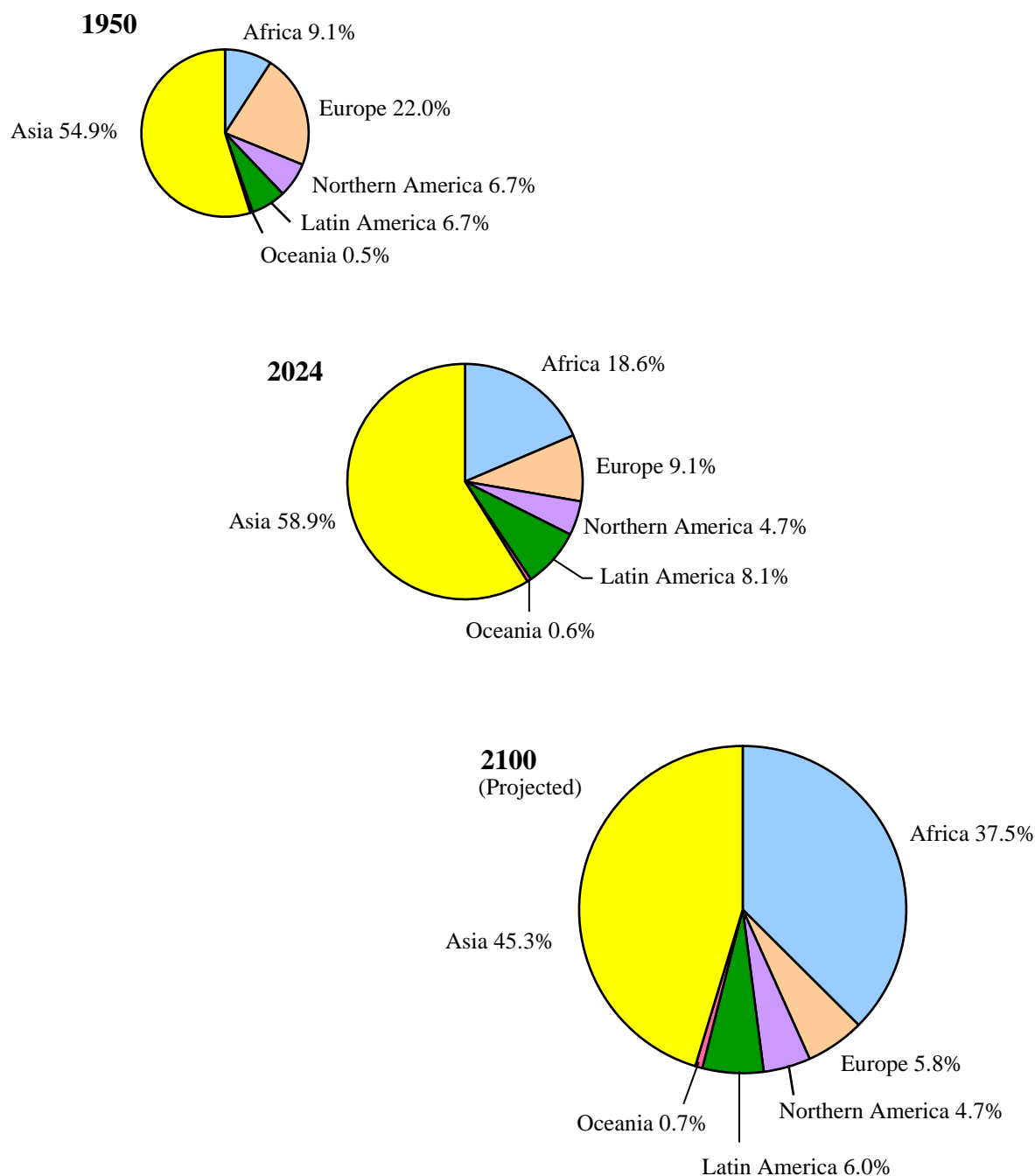
Notes:

(1)   Latin America includes Central America, South America and the Caribbean.

(2)   Areas of the pie charts are proportional to the population sizes in the corresponding years.

(3)   Figures for 1950 have been revised.

Source: *World Population Prospects : The Population Database*, Population Division of the United Nations Department of Economic and Social Affairs

3 Impact of changes in population and its structure on society

Impact of changes in population and its structure on Hong Kong

In Hong Kong, there are a number of concerns arising from the continuous growth of population and changes in its structure.

Increasing population density

With 7.52 million people (excluding marine population) living in its land area of only 1 115 square kilometres, Hong Kong is one of the most densely populated places in the world. In 2024, the territory as a whole had an average of 6 900 persons per square kilometre, compared to 6 680 persons per square kilometre in 2014. For some areas, the population density was even higher. For instance, Kwun Tong, with 59 300 persons per square kilometre, was the most densely populated district in 2024.

Chart 3.2   Population density by District Council district, 2024

Population density (number of persons per km²)

3 Impact of changes in population and its structure on society
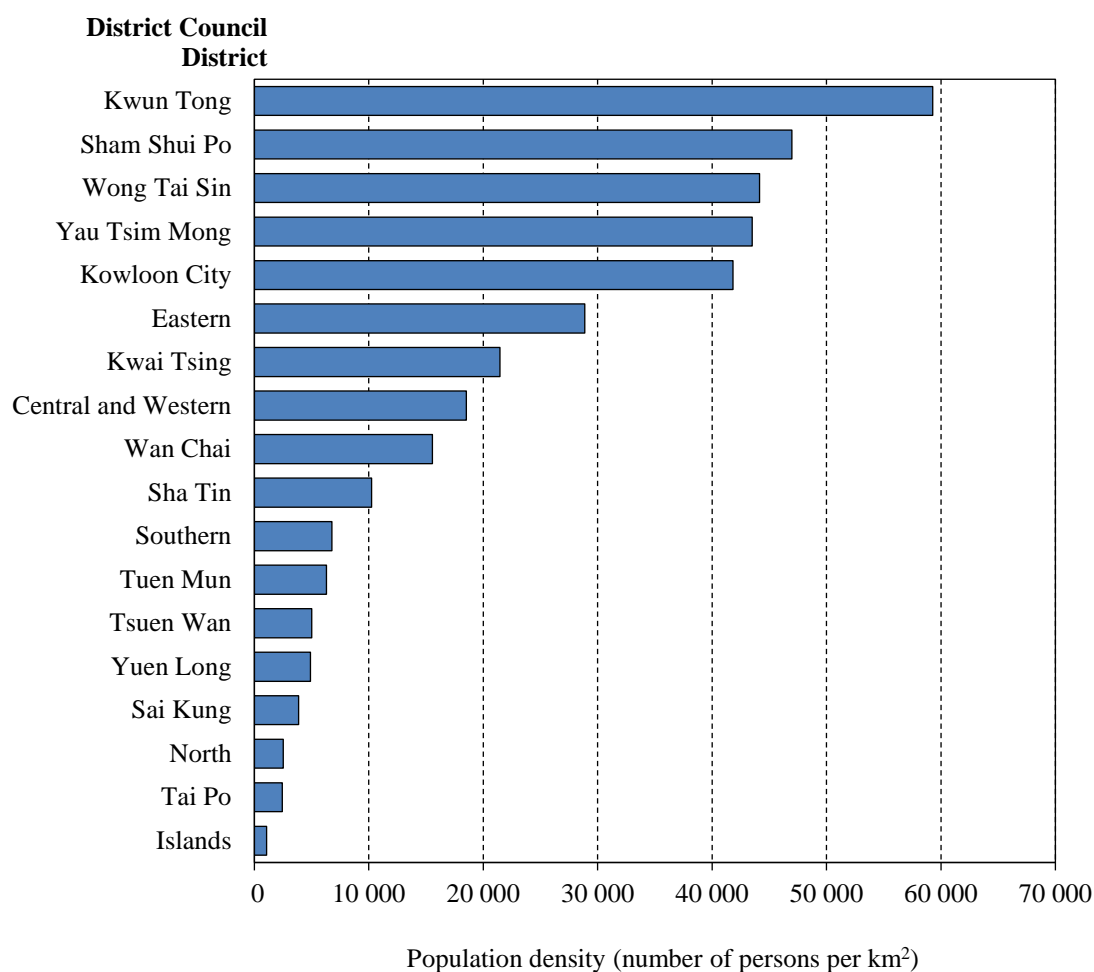
To reduce urban congestion and to meet the new housing needs of the growing population, systematic and coordinated development of new towns began in the early 1970's. Since then, there has been rapid development of new towns in the more remote areas. At present, there are ten new towns, namely Tsuen Wan, Tuen Mun, Yuen Long, Tin Shui Wai, Fanling / Sheung Shui / Kwu Tung, Tai Po, Sha Tin, Tseung Kwan O, Tung Chung and Hung Shui Kiu / Ha Tsuen. New town boundaries are also adopted in the dissemination of the 2021 Population Census (21C) results. Tsuen Wan, Kwai Chung and Tsing Yi areas under Tsuen Wan New Town as well as Sha Tin and Ma On Shan areas under Sha Tin New Town are analysed separately for the purpose of defining internal migration.

The development of new towns has led to a re-distribution of the population, from the older urban areas on Hong Kong Island and in Kowloon to the new towns. According to the results of the 21C, people living in the new towns accounted for about 48% of the Hong Kong land population in 2021, while the corresponding percentage was only 26% in 1981.

Traffic congestion

The large population of Hong Kong generates a huge volume of traffic which, coupled with a lack of space, places a great strain on the internal transport systems.

To obtain an indication of the traffic volume, the number of motor vehicles can be compared with the total length of public roads. As at end-2024, there were about 361 motor vehicles per kilometre of road, compared with around 333 as at end-2014. The increase was mainly contributed by the increase in the number of private cars.

As in places all over the world, people of Hong Kong rely much on public transport services in their daily living.

In 2024, public transport carried 4.3 billion passengers[4], as compared with 4.6 billion in 2014.

As in past years, railways continue to be a major type of carrier among the various public transport modes in Hong Kong. They comprise the Mass Transit Railway (MTR) heavy rail systems (which include nine local lines, Intercity Through Train (suspended since 30 January 2020 and ceased formally on 31 July 2024), High Speed Rail and the Airport Express Line), the Light Rail and the Hong Kong Tramways. Compared with 2014, the average daily patronage of railways in 2024 remained virtually unchanged, at 5.3 million passenger journeys. Over the same period, the share of railways in annual total public transport journeys increased from 42.0% in 2014 to 45.4% in 2024.
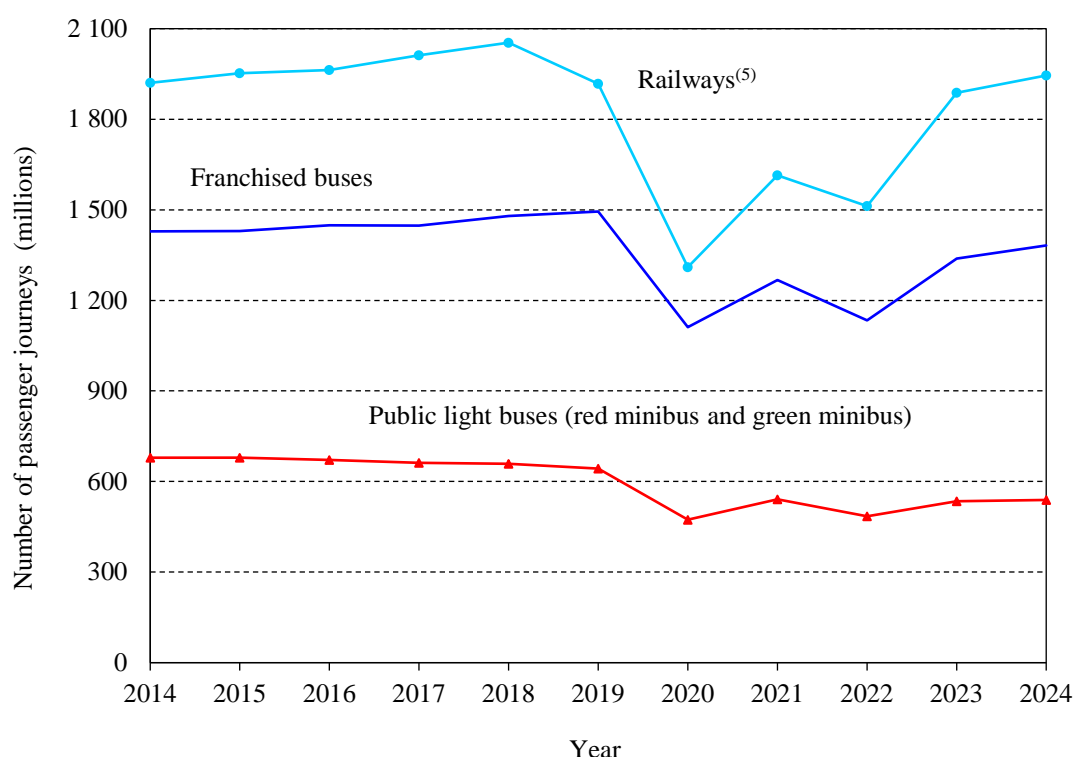
Note :
(4) The number of passengers cited in transport statistics actually refers to the number of passenger journeys. Since a person may make more than one journey during a period of time, the figure is usually larger than the number of people who have ever made journeys during the period.

Another important component of the public transport system in Hong Kong is franchised buses.   In 2024, they carried an average of 3.8 million passenger journeys a day or 32.3% of annual total public transport journeys.   Ten years ago, the average daily patronage was 3.9 million passenger journeys, or 31.3% of the annual total public transport journeys.

To ensure the smooth and efficient movement of people and goods, careful co-ordination and management of the traffic and transport systems are needed.   This involves a programme to improve the road network, expansion of public transport services and measures to achieve more economic use of the limited road capacity.

Chart 3.3   Annual passenger journeys by major mode of public transport, 2014 – 2024

Note :
(5)   Railways comprise the MTR heavy rail systems (which include nine local lines, Intercity Through Train (suspended since 30 January 2020 and ceased formally on 31 July 2024), High Speed Rail and the Airport Express Line), the Light Rail and the Hong Kong Tramways.

3 Impact of changes in population and its structure on society

Chart 3.4   **Motor vehicles licensed, 2014 – 2024[6]**
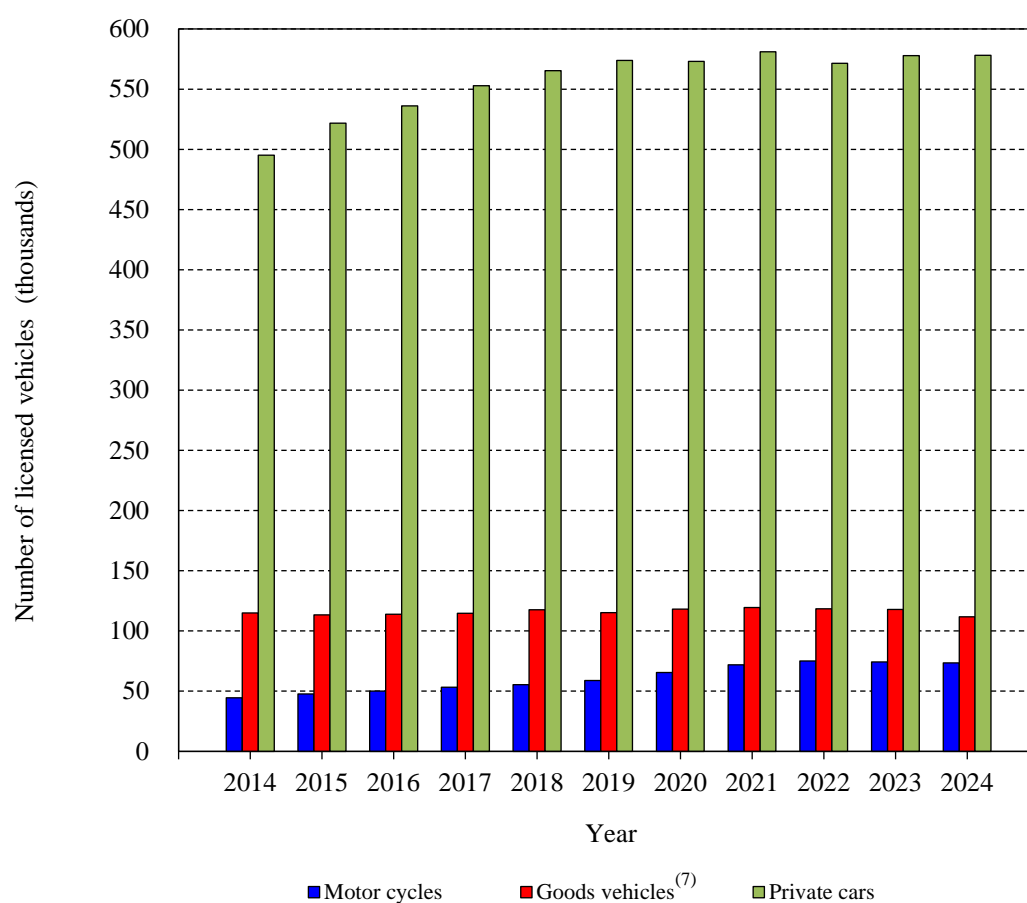
Notes :

(6)   Figures refer to end of the year.

(7)   Goods vehicles include Special Purpose Vehicles.

Impact of changes in population and its structure on society

Increasing demand for housing

As Hong Kong is scarce of land, the Government has to ensure that there is steady and sufficient supply of serviced land for meeting the demand for housing brought about by the continuous growth of the population.   To achieve this, the Government needs to develop strategic growth areas (including new and existing land for housing), renew urban areas, redevelop old districts, reclaim more land, perform better town planning and rezone agricultural and industrial land for housing development where appropriate.

During 2014 to 2024, around 361 000 residential flats were completed to meet the housing needs of people in Hong Kong.   As at end of March 2025, the total stock of permanent living quarters in Hong Kong was 3 090 300.

Of the 2.76 million domestic households in 2024, 30.0% resided in public rental housing, 15.4% in subsidised home ownership housing[8] and 53.8% in private permanent housing[9].   Only less than 1% of domestic households lived in temporary housing.

Notes :

(8) Subsidised home ownership housing includes flats built under the Home Ownership Scheme, Middle Income Housing Scheme, Private Sector Participation Scheme, Green Form Subsidised Home Ownership Scheme, Buy or Rent Option Scheme and Mortgage Subsidy Scheme, and flats sold under the Tenants Purchase Scheme of the Hong Kong Housing Authority.   It also includes flats built under the Flat-For-Sale Scheme, Sandwich Class Housing Scheme and Subsidised Sale Flats Projects of the Hong Kong Housing Society, and flats in Urban Renewal Authority Subsidised Sale Flats Scheme.   As from the first quarter of 2002, subsidised sale flats that can be traded in open market are excluded.

(9) Private permanent housing includes private housing blocks, flats built under the Urban Improvement Scheme of the Hong Kong Housing Society, villas / bungalows / modern village houses, simple stone structures / traditional village houses and quarters in non-residential buildings.   As from the first quarter of 2002, subsidised sale flats that can be traded in open market are also put under this category.

Chart 3.5 **Distribution of domestic households by type of housing, 2014 – 2024**
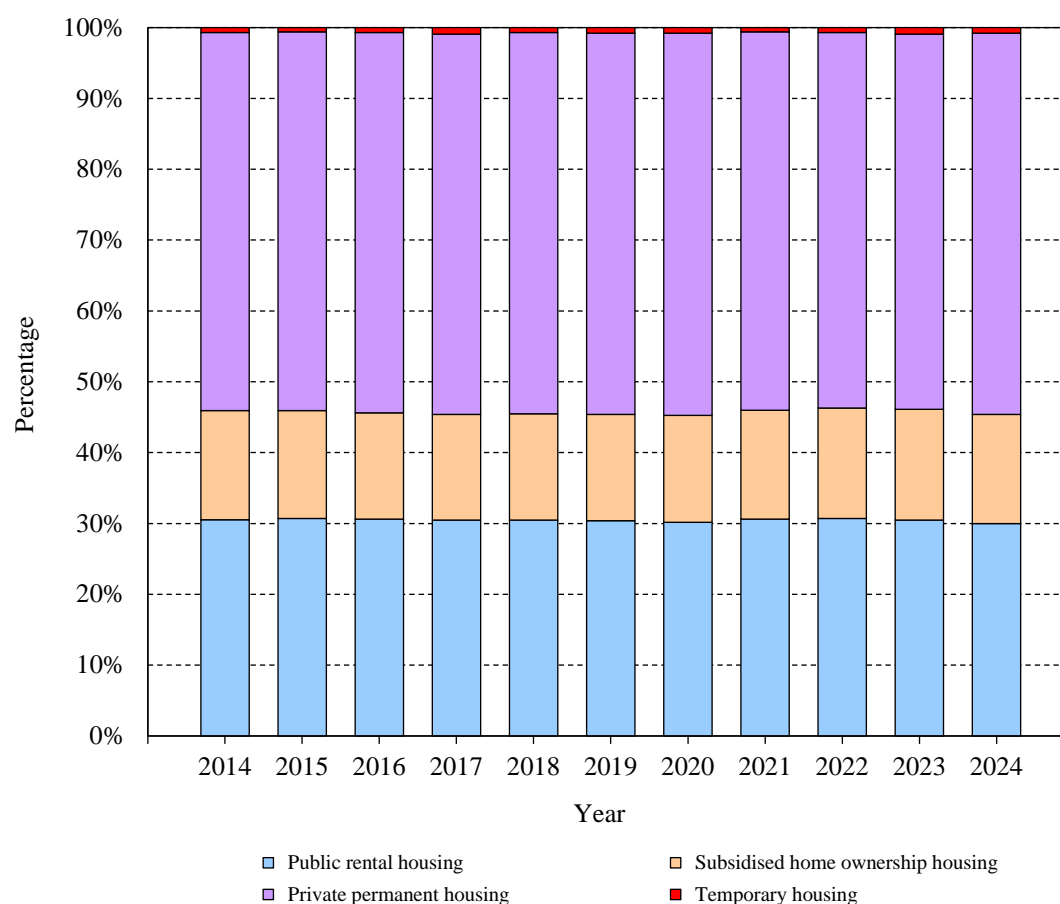
Structural decline in student enrolments from pre-primary to secondary education

Since 2019, the number of students in pre-primary and primary education has showed a general decrease, whereas those in secondary and post-secondary education remained stable. Given that the number of births in Hong Kong declined significantly from 60 900 in 2016 to 32 500 in 2022 and then gradually increased to 36 700 in 2024, the trend of structural decline in school-age population would continue. The number of students in pre-primary, primary and secondary education would also decrease generally along with the change in local births.

Chart 3.6   Student enrolment(10) by level of education, 2014 – 2024
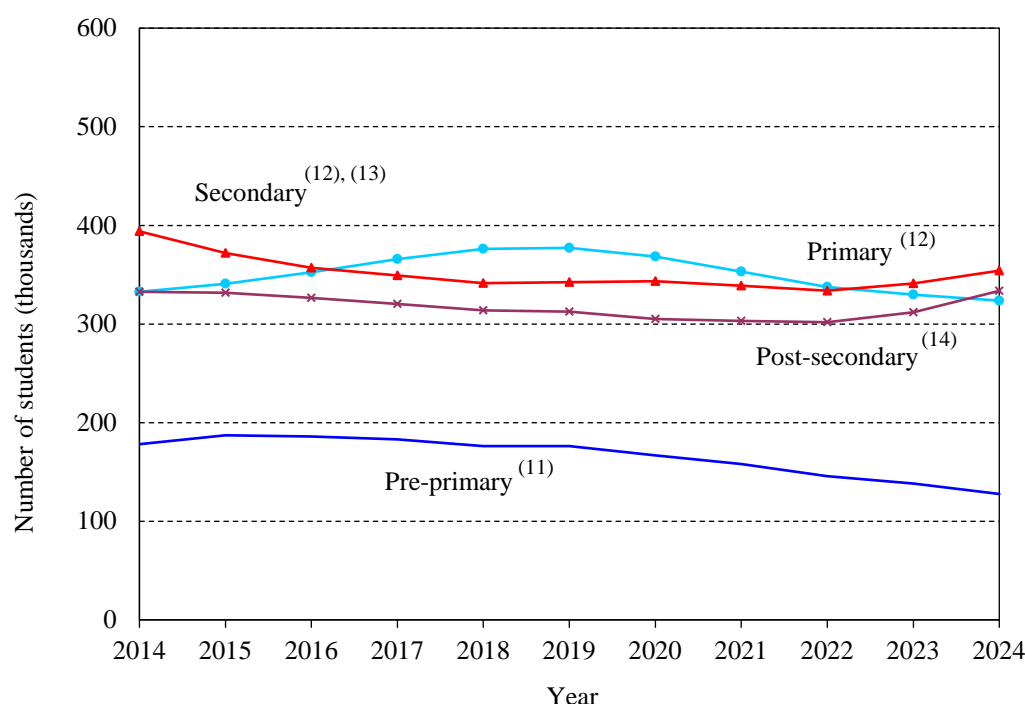
Notes :

(10) Figures include both full-time and part-time students attending long programmes lasting for at least one school / academic year.   Figures do not include students attending tutorial, vocational and adult education courses offered by schools below post-secondary education level.   Figures for secondary and post-secondary education for 2024 are provisional.

(11) Figures include nursery, lower and upper classes in kindergartens and kindergarten-cum-child care centres registered under the Education Bureau, and special child care centres registered under the Social Welfare Department.

(12) Figures include special schools.

(13) Figures include evening schools, craft level courses and Diploma Yi Jin programme / Diploma of Applied Education.

(14) Figures include universities and colleges offering post-secondary courses including certificate / diploma, associate degree or equivalent and bachelor degree or above; and also non-local registered or exempted courses leading to non-local higher academic qualifications and operated jointly with non-local institutions.

3 Impact of changes in population and its structure on society

Increasing elderly dependency ratio

The population o`f Hong Kong is ageing, as can be seen from the increase in the median age of the population from 42.8 in 2014 to 47.9 in 2024.   As a result, the elderly dependency ratio increased from 198 per 1 000 population of working age in 2014 to 340 per 1 000 population of working age in 2024.   It is common to consider the elderly as dependent on those aged 15 to 64.   The rise in the elderly dependency ratio reflects that there is an increase in the demand for social services, in particular social welfare and medical and health services.

Increasing demand for social welfare services

The percentage of population aged 65 and above has increased gradually, resulting in the increasing demand for social welfare services.   The total number of elderly recipients (i.e. recipients aged 65 and above) of the Comprehensive Social Security Assistance (CSSA) and Social Security Allowance (SSA) Schemes (excluding Guangdong Scheme and Fujian Scheme) increased from 809 300 in end-2014 to 1 276 100 in end-2024.   While the CSSA Scheme is designed to provide members of the community who cannot support themselves financially with monetary assistance to meet their basic and special needs, the SSA Scheme is to provide a monthly allowance to members of the community to meet their special needs arising from old age or disability.

The Government also provides a wide range of elderly and community services. Community services include the operation of Social Centre for the Elderly, District Elderly Community Centres, Neighbourhood Elderly Centres, Day Care Centres / Units for the Elderly, Enhanced Home and Community Care Services, and Integrated Home Care Services (these two services were merged into Home Support Services and Home Care Services for Frail Elderly Persons with effect from 1 October 2024), which aim to enable the elderly to continue to stay in the community.

3 Impact of changes in population and its structure on society

Chart 3.7   **Number of elderly recipients of the Comprehensive Social Security Assistance (CSSA) and Social Security Allowance (SSA) Schemes (excluding Guangdong (GD) Scheme and Fujian (FJ) Scheme) and percentage of population aged 65 and above, 2014 – 2024[15]**

Number of elderly recipients (i.e. recipients aged 65 and above) of CSSA and SSA Schemes (excluding GD Scheme and FJ Scheme)

Percentage of population aged 65 and above
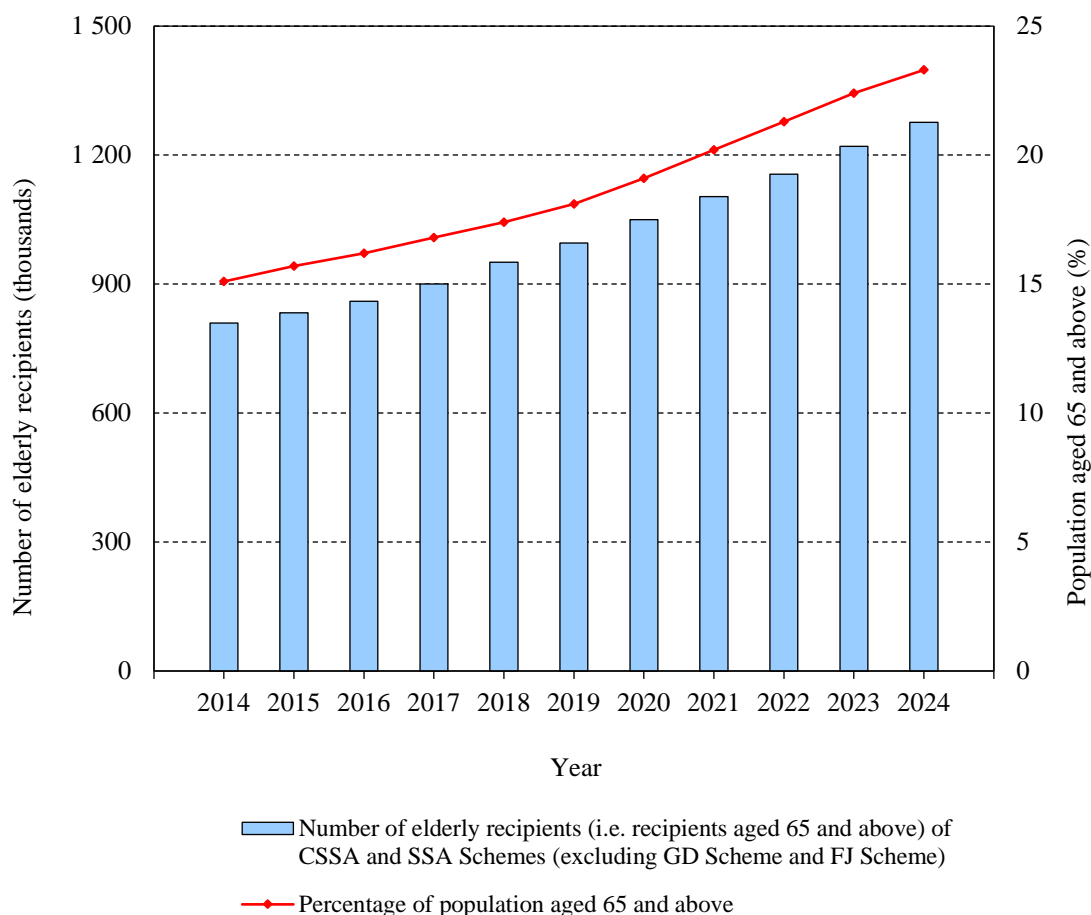
Population projections

For the purpose of forward planning of service needs, the size, structure and distribution of the population in future years have to be projected. A reliable projection requires careful examination of past trends of fertility, mortality and population movement to determine their possible changes in the future. The assumed changes are then added onto the base population, which is derived from a population census or by-census, year after year to obtain the projection results.

Note :

(15) Figures refer to December of the year.

3 Impact of changes in population and its structure on society

C&SD is responsible for compiling projections of the population of Hong Kong. The main use of the population projections is to provide a common basis for government programme planning in such areas as education, housing, transport, social services and health services. The projection results are also widely applied in academic research and business development and planning in the private sector. The latest set of population projections was released in August 2023, covering the period from mid-2022 to mid-2046.

A set of population projections compiled using the mid-2021 population as the base and a corresponding set of domestic household projections were released in August 2023.
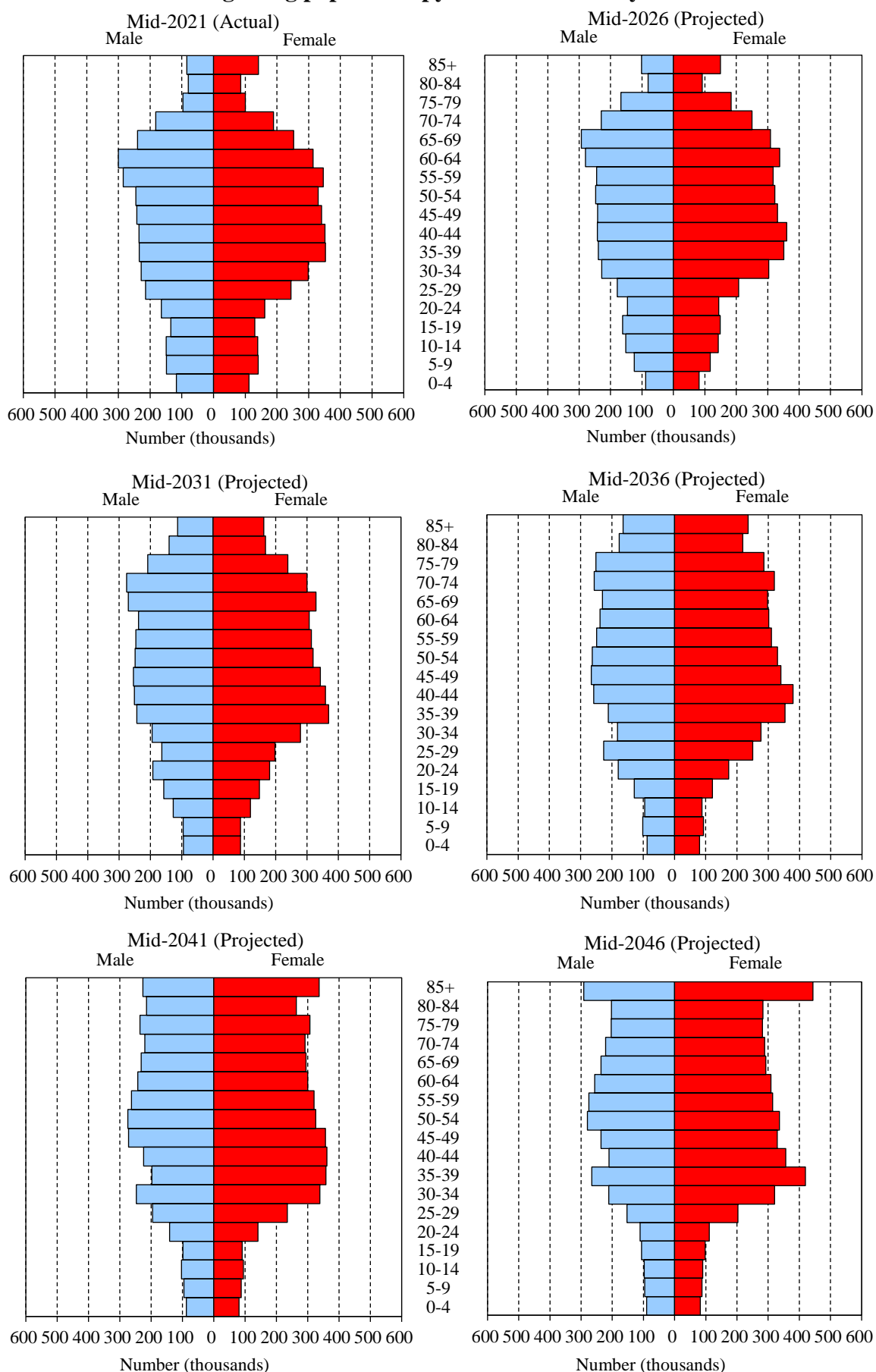
"Component method" for population projections

The "component method", which is commonly used internationally, is adopted for compiling the population projections. Under this method, the size and age-sex structure of the projected population in each of the projection years are obtained by applying different assumptions made on the fertility, mortality and population movement conditions for the projection year to the population situation in the preceding year. Therefore, in compiling the population projections, the population situation in a base year will be used as the starting point. It is then brought forward under separate projections of fertility, mortality and population movement, year after year until the end of the projection period. While fertility, mortality and population movement assumptions are formulated mainly on the basis of the past trends and recent developments pertaining to the socio-economic conditions in Hong Kong, government policies, if involved, are taken as that the existing policies would continue to apply except for known policy changes.

Major projection results

According to the projection results using the mid-2021 population as the base, the Hong Kong population is projected to increase from 7.41 million in mid-2021 to 8.19 million in mid-2046, representing an average growth rate of 0.4% per annum. Over the entire projection period, the overall population is projected to increase by 0.78 million. There would be a natural decrease (i.e. deaths less births) of 0.75 million and a net population inflow (i.e. inflow less outflow) of 1.52 million.

Chart 3.8   Hong Kong population pyramid at selected years

Mid-2021 (Actual)

Mid-2026 (Projected)

Mid-2031 (Projected)

Mid-2036 (Projected)

Mid-2041 (Projected)

Mid-2046 (Projected)

3 Impact of changes in population and its structure on society

Population on an ageing trend

Population ageing is expected to continue.   With post-war baby boomers entering old age and the rising life expectancy, the number of elderly persons aged 65 and over is projected to nearly double over the 25-year period.   Excluding foreign domestic helpers, the number of elderly persons will increase from 1.45 million (20.5% of the total population) in 2021 by 1.29 million to 2.74 million (36.0%) in 2046.   Compared with the growth of about 0.80 million in the last 25 years (from 1996 to 2021), the elderly population will increase distinctly at a much faster pace in the future. Meanwhile, due to the persistently low fertility rate, the proportion of the population aged under 15 is projected to decrease gradually from 11.4% in 2021 to 7.1% in 2046.

Chart 3.9   Hong Kong population by age group, 2011 – 2046[16]
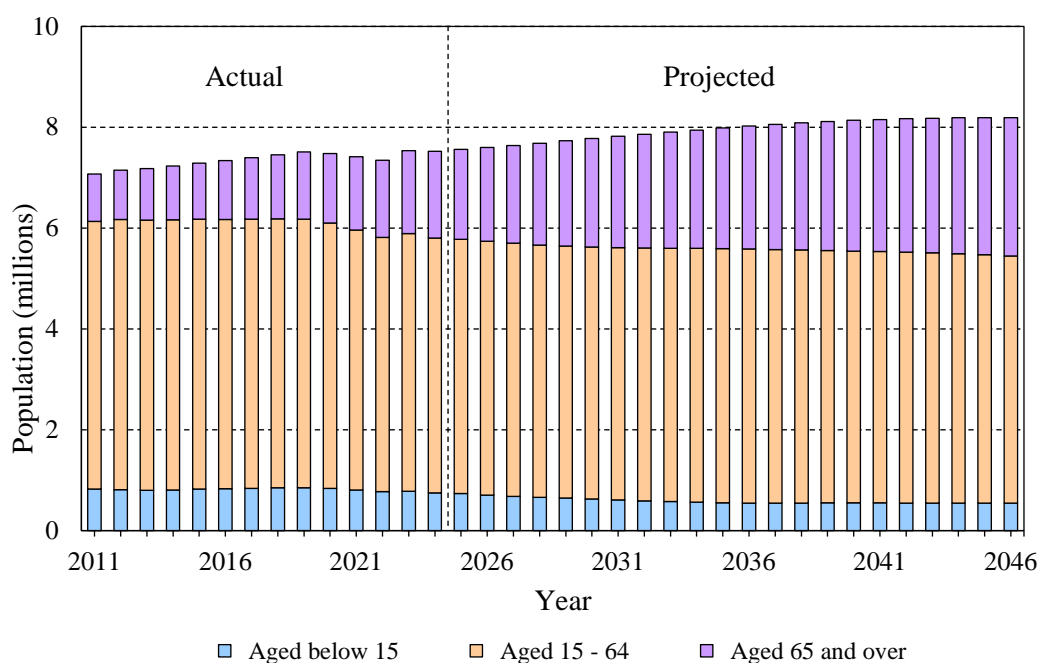
Note :

(16)   Figures for 2024 and before are the actual figures.

Decreasing sex ratio

Another noteworthy point is that the proportion of males in the population would keep on decreasing.   In 2021, the sex ratio (i.e. the number of males per 1 000 females) of the population was 839.   Owing to the continued entry of One-way Permit holders (many being Hong Kong men's wives in the Mainland) and foreign domestic helpers (mostly being younger females) into Hong Kong in the coming years and the fact that females in general live longer than males, the sex ratio is projected to fall noticeably to 762 in 2046.   Even with the effects of foreign domestic helpers excluded, the sex ratio would still come down from the level of 910 in 2021 to 865 in 2046.

Chart 3.10   **Proportion of male and female populations, 2011 – 2046 (including foreign domestic helpers)** [17]
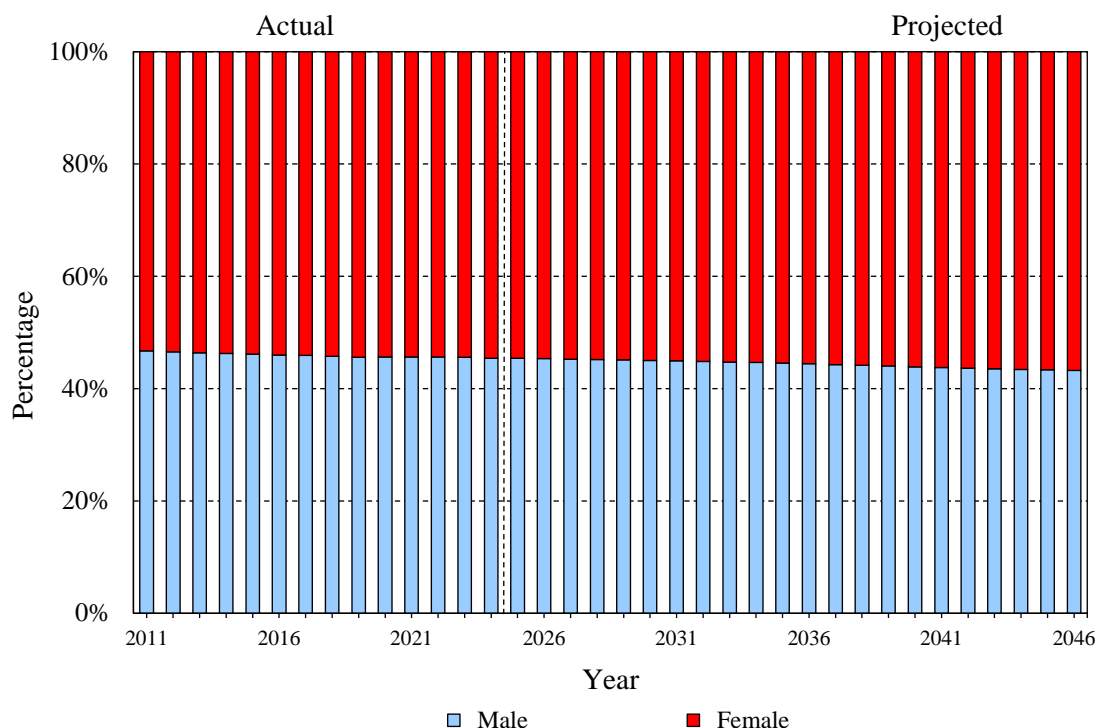
Note :

(17)   Figures for 2024 and before are the actual figures.

Labour force projections

The size and the composition of the labour force within the population are important determinants of economic development. Labour force projections of Hong Kong compiled by C&SD provide information on the future labour supply in Hong Kong and its age and sex distribution. Such information serves as useful reference for policy planning and formulation. The latest set of labour force projections was released in August 2023, covering the projection period from 2022 to 2046.

Methodology

In compiling the labour force projections for the period from 2022 to 2046, reference has been made to the results of the 2021-based population projections and the latest trends of the age-sex specific labour force participation rates. Foreign domestic helpers are not included in the projected labour force participation rates and labour force figures.

The labour force, synonymous with the economically active population, comprises the employed population and the unemployed population. The labour force participation rate refers to the proportion of the labour force in the population aged 15 and over. It is a measure of the propensity of the persons of working age to be in the labour force. In particular, the proportion of persons participating in the labour force in a particular age-sex group is termed as the age-sex specific labour force participation rate for the group.

In compiling the projected labour force, a set of projected labour force participation rates for individual projection groups in the population for different years within the projection period is first compiled with reference to the latest trends of the age-sex specific labour force participation rates. The projected labour force participation rate for each projection group is then multiplied to the projected population size of the corresponding group to derive the projected labour force of the group in each of the years over the projection period. Finally, the projected labour force of all groups in the same year are summed up to give the projected total labour force for the year concerned.

Major projection results

Projected labour force participation rates (excluding foreign domestic helpers)

Owing to the population ageing effect, the overall labour force participation rate is projected to decline steadily from 57.2% in 2021 to 51.6% in 2046.   The overall labour force participation rate for both males and females are projected to decrease from 65.7% and 49.6% in 2021 to 60.2% and 44.3% in 2046 respectively.

Chart 3.11   Labour force participation rate (excluding foreign domestic helpers) by sex, 2016 – 2046[18]
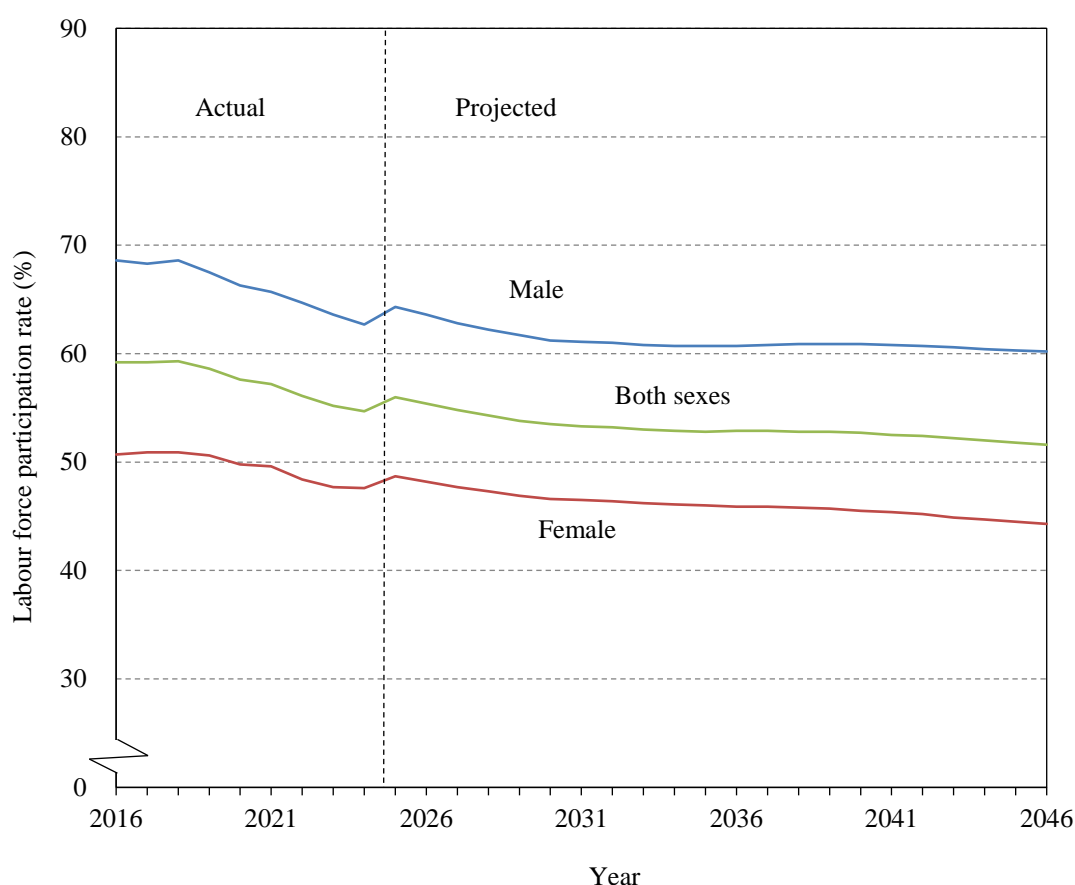
Note :

(18)   Figures for 2024 and before are the actual figures.

Projected labour force (excluding foreign domestic helpers)

The total labour force is projected to increase generally from 3.54 million in 2021 to a peak of 3.66 million in 2038, before decreasing gradually to 3.58 million in 2046.

The labour force for males is projected to rise from 1.92 million in 2021 to a peak of 1.96 million in 2038 and then decline generally to 1.92 million in 2046.   Similarly, the labour force for females is projected to rise from 1.62 million in 2021 to a peak of 1.70 million in 2038 and then decline gradually to 1.66 million in 2046.

Chart 3.12   Labour force (excluding foreign domestic helpers), 2016 – 2046[19]
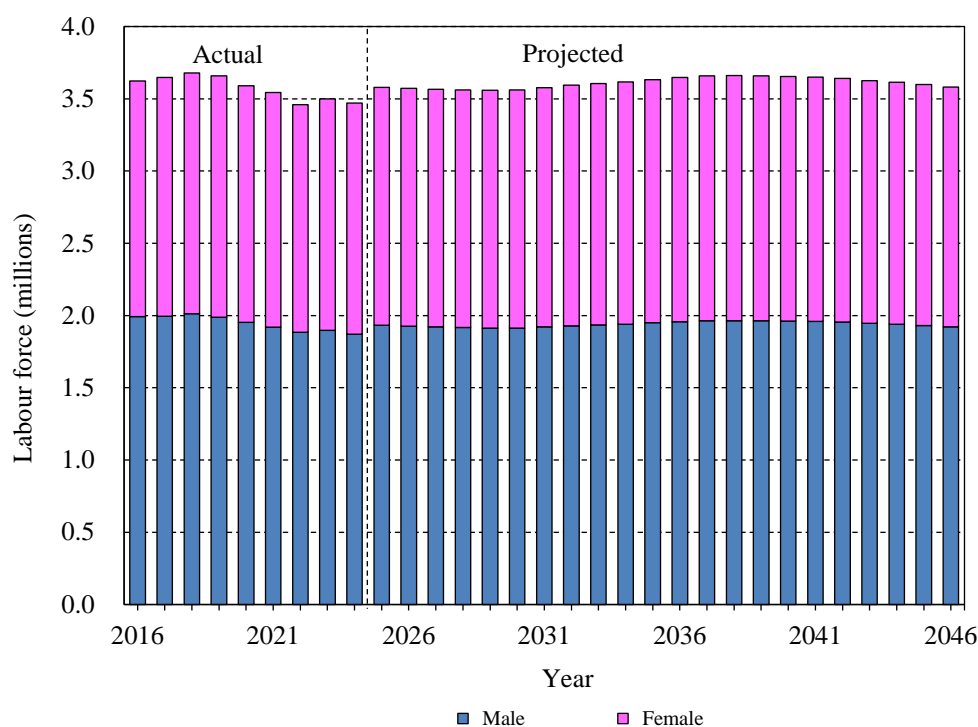
Note :

(19)   Figures for 2024 and before are the actual figures.

3 Impact of changes in population and its structure on society

Further information

The above contents present only part of the information produced by C&SD on the topics concerned.   For further information regarding the topics discussed in this chapter (e.g. latest statistics, statistical reports, concepts and methods), please visit the following sections of the C&SD website :

[Population estimates](#)
[Population censuses and by-censuses](#)
[Population and household projections](#)
[Demographics](#)
[Labour force, employment and unemployment](#)
[Labour force and manpower requirement projections](#)
[Transportation, storage and courier services](#)
[Information and communications](#)
[Tourism](#)
[Housing and property](#)
[Education](#)
[Social welfare](#)
[Health](#)

Interactive quiz

You may test the knowledge you have learnt in this Chapter by trying this [interactive quiz.](#)   Answers to the questions can be found in the relevant paragraphs of this Chapter.

Impact of changes in population and its structure on society

Exercise

Identifying impact of changes in population and its structure on society

To arouse the public's awareness of various population and social problems, readers may try to identify such problems in the districts they live, in the whole territory of Hong Kong, or in other countries.

For example, readers may consider the problem of traffic congestion in Hong Kong by looking up statistics compiled by C&SD or other government departments (e.g. Transport Department) in order to quantify the magnitude of traffic congestion in broad terms, and to consider how the various problems can be solved.   Examples of relevant statistics include number of motor vehicles licensed, length of roads and number of passengers using different kinds of public transport.

4 Other official statistics

Introduction

Official statistics are generally statistics compiled by the Government based on raw data from such sources as administrative records, special returns and surveys. Where surveys are conducted, there are often statistical legislations requiring the target persons or companies to supply the required raw data.

C&SD is the central statistical office of Hong Kong. C&SD together with statistical units established in various government bureaux and departments forms the Government Statistical Service. Broadly speaking, most general-purpose statistics come under the responsibility of C&SD. The statistical units in various government bureaux and departments are responsible for specific-purpose statistics (for dedicated use in their respective work areas) and provide necessary support in the application of statistics.

In this knowledge-based era, more and more people are making use of statistics in their work and daily lives. Official statistics play an important role in a wide range of endeavours, including macro-economic analysis, day-to-day administration and long term planning of the Government, decision-making of individuals and business firms, and enhancing people's understanding of the society and their participation in discussions about social and economic policies.

Some of the more common economic and social statistics are introduced in the following sections.

(A) Economic statistics

Economic statistics comprise, among others, the following areas : trade statistics, national income statistics, balance of payments statistics, labour statistics, price statistics and operating statistics of businesses.

Just as doctors need to use medical equipment when they make diagnoses, economic analysts need to make reference to statistics in forming their views from theoretical considerations. Economic statistics serve as measuring instruments which enable the analysts to judge whether different economic sectors in the economy are in harmony, whether the economy is stagnant or overheated, and whether economic performance will improve or decline. Although different analysts may have different views on economic prospects or on the role of the Government, there is no doubt about the importance of good measuring instruments to them.

4   Other official statistics

Apart from facilitating macro-economic analysis, economic statistics are also very useful in business planning.   Businessmen can make use of the statistics in deciding what businesses to invest in, what products to produce, where to locate shops, at what wages they should employ workers, and so on.

Trade statistics

Hong Kong is an externally oriented economy.   Its economic performance is highly related to the performance of the external sector.   Hong Kong external trade comprises trade in goods (i.e. merchandise trade) and trade in services.

Trade in goods covers movements of merchandise between Hong Kong and her trading partners, by land, air, water and by post.   It comprises imports and total exports.

Trade in services includes exports and imports of services.   Exports of services are the sales of services to the rest of the world, whereas imports of services are the purchases of services from the rest of the world.

(1) Merchandise trade

Merchandise trade statistics provide important indicators of the performance of the external sector of the economy in respect of merchandise trade.   They can be analysed by the two components of external merchandise trade, namely total exports and imports.   In addition to aggregate statistics of trade in respect of each of the components, detailed statistics are also available on Hong Kong's trade with different countries / territories and for different commodities.

Besides providing very useful information on the performance of an economy, trade statistics can also be used by business firms in decision-making on such areas as forecasting business prospects, measuring market shares, planning investment and formulating marketing, production and development strategies.

As a free port, Hong Kong has minimal import and export licensing requirements. Most products do not need licences to enter or leave Hong Kong.   Unlike many other economies, there is no import tariff in Hong Kong.   Yet, persons who import or export goods (except for exempted goods) are required to submit import / export declarations to the Customs and Excise Department within 14 days after the importation / exportation of goods.   The import / export declarations are subsequently forwarded to C&SD for further processing and compilation of Hong Kong's external merchandise trade statistics.   The import / export declaration is a typical example of special returns for collecting raw data essentially used for trade statistics compilation.

4   Other official statistics

Electronic submission of trade declarations has been made mandatory as from April 2000. In 2024, some 19.1 million import / export declarations were processed by C&SD.

> *In 2024, some 19.1 million import/export declarations and 5.4 million cargo manifests were processed by C&SD.*

The Hong Kong Special Administrative Region is a separate customs territory, as stated in "The Basic Law of the Hong Kong Special Administrative Region of the People's Republic of China". Import / export declaration is also required of Hong Kong's trade with the Mainland, and statistics relating to this are included in Hong Kong's external merchandise trade statistics.

In 2024, the value of Hong Kong's total merchandise trade was $9,464.5 billion, higher than that in 2023 by 7.3%. Of this, $4,542.4 billion were attributable to total exports and $4,922.1 billion to imports.

Between 2014 and 2024, the values of total exports and imports of goods increased respectively at an average annual growth rate of 2.1% and 1.6%.

Total exports of goods comprise domestic exports and re-exports. Domestic exports are the natural produce of Hong Kong or the products of a manufacturing process in Hong Kong which has changed permanently and substantially the shape, nature, form or utility of the basic materials used in manufacture. Re-exports are products which have previously been imported into Hong Kong and which are re-exported without having undergone in Hong Kong a manufacturing process which has changed permanently and substantially the shape, nature, form or utility of the basic materials used in the manufacture. The values of exports are recorded on f.o.b. (free on board) basis, i.e. on the basis of the value of the commodities when they leave the customs boundary of Hong Kong.

4　Other official statistics

Imports of goods are goods which have been produced or manufactured in places outside the jurisdiction of Hong Kong and brought into Hong Kong for local use or for subsequent re-export as well as Hong Kong products re-imported.　Their values are recorded on c.i.f. (cost, insurance and freight) basis, i.e. on the basis of the value of the imported commodities when they enter into Hong Kong. C.i.f. value of an imported commodity is usually higher than its f.o.b. value, as the former includes also the insurance and transportation fees for delivering the commodity from the exporting territory to the importing territory.
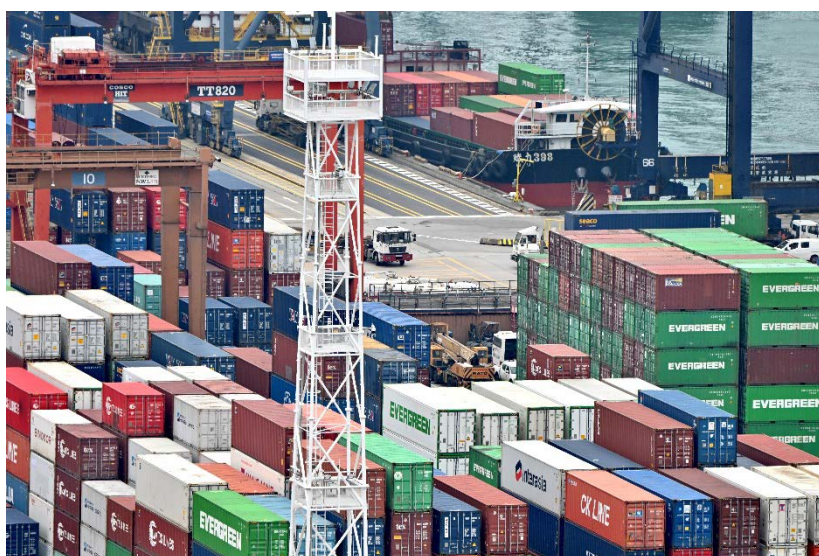
External merchandise trade statistics are compiled based on information contained in import/export declarations.

The Mainland and the United States of America were the two largest destinations of Hong Kong's total exports in 2024.　They accounted for 59.0% and 6.5% respectively of the total export value.

The major commodities in Hong Kong's total exports include electrical machinery, apparatus and appliances, and electrical parts thereof; telecommunications and sound recording and reproducing apparatus and equipment; office machines and automatic data processing machines; miscellaneous manufactured articles (mainly jewellery, goldsmiths' and silversmiths' wares); and professional, scientific and controlling instruments and apparatus.

Most of Hong Kong's imports of goods come from the Mainland, Taiwan, Singapore, Korea and Japan.　In 2024, the Mainland accounted for 43.6% of the total import value, compared to 47.1% in 2014.

4 Other official statistics

Chart 4.1 Values of total exports and imports of goods, 2014 – 2024
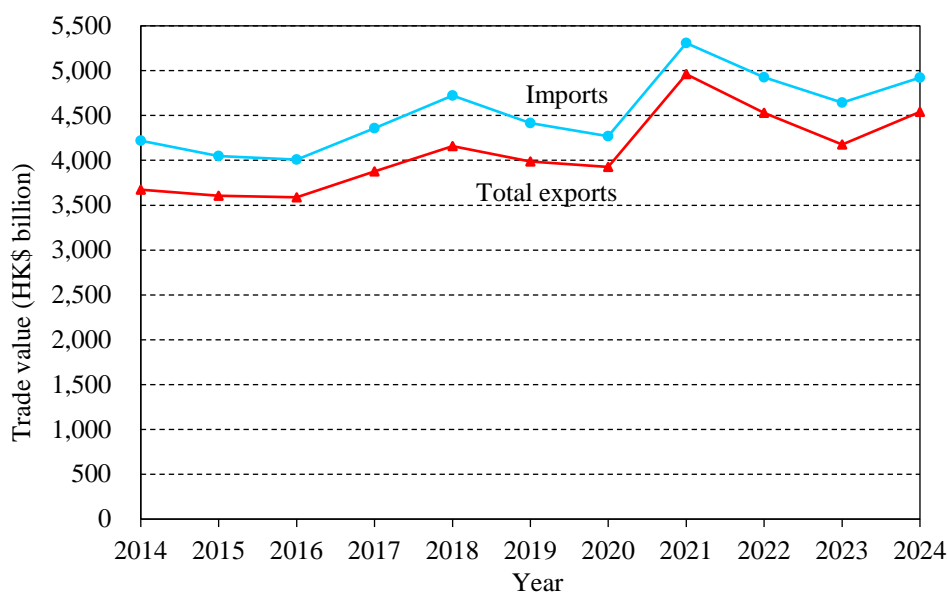
(2) Trade in services

With the structural change in the Hong Kong economy, the importance of service industries has been on the rise. Being an externally oriented economy, Hong Kong is an important centre not only for trade in goods, but also for trade in services (TIS). TIS in Hong Kong has been maintaining observable growth in recent years.

Hong Kong's TIS statistics can be traced back to the reference year of 1980. Owing to data limitation, the classification of services at that time was only based on major industries in which the Hong Kong businesses were engaged. In response to the growing demand for detailed statistics on TIS, Hong Kong has started releasing detailed TIS statistics by type of services and country / territory on an annual basis since 2002, with the series dated back to the reference year of 1995.

The value of total exports of services rose from $829.1 billion in 2014 to a record high of $886.9 billion in 2018. However, due to the COVID-19 pandemic, it declined significantly in the subsequent years until the post-pandemic period, during which the total exports of services have gradually recovered and experienced an upward trend. The value of total exports of services increased by 2.2%[@] to $847.3 billion[@] in 2024 as compared to 2014. In 2024, the two largest service components in exports of services were transport and financial services (at $278.8 billion[@] and $214.9 billion[@] respectively), which brought about a sizable surplus in the overall TIS after netting out the total imports of services ($702.4 billion[@]).

Analysing exports of services of Hong Kong by geographical breakdown[1] in 2023, the Mainland (29.8%) and the United States of America (19.2%) were the top two main destinations, followed by the United Kingdom (10.2%), Singapore (5.0%) and Taiwan (3.8%).

For imports of services[1] of Hong Kong in 2023, the Mainland (39.0%) and the United States of America (12.4%) were also the top two main sources, followed by Japan (7.7%), the United Kingdom (7.0%) and Singapore (5.3%).

Chart 4.2   Values of exports and imports of services of Hong Kong, 2014 – 2024
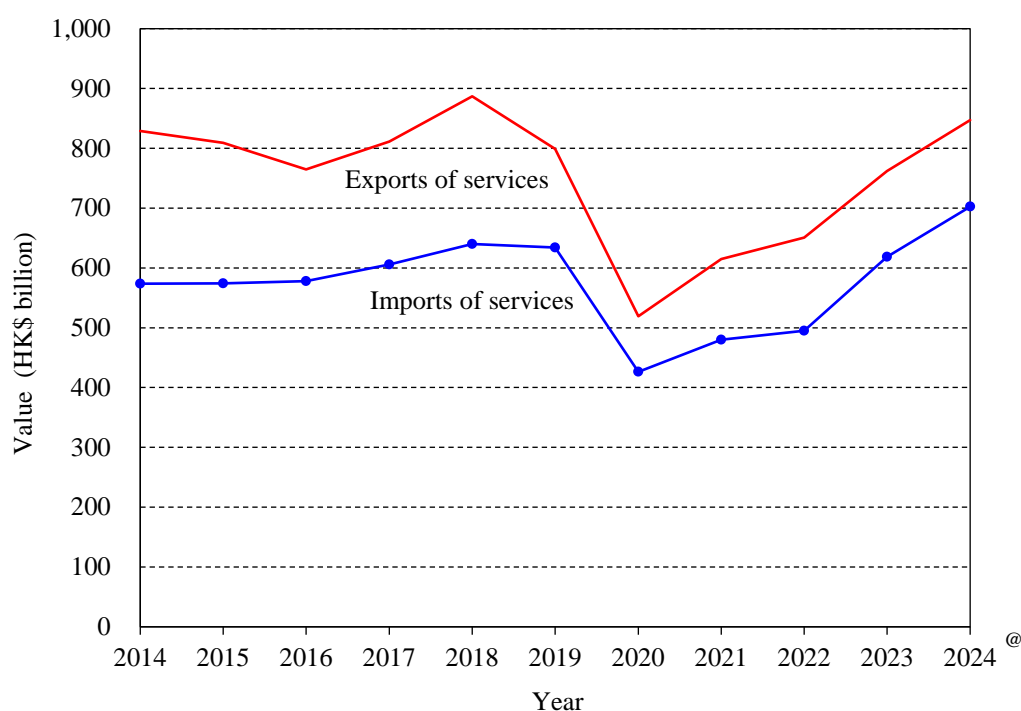
Note :

(1)   Since financial intermediation services sdirectly measured (FISIM) have no geographical breakdowns, TIS figures analysed by country / territory do not include FISIM.

4   Other official statistics

National income statistics

Gross Domestic Product (GDP) and Gross National Income (GNI) are core statistics in National Accounts. They are both important economic indicators and are useful for analysing the overall economic situation of an economy, with the former particularly useful for reflecting the level of production, and the latter for aggregate income of residents.

GDP is a measure of the total value of production of all resident producing units of an economy in a specified period (typically a year or a quarter), before deducting the consumption of fixed capital. By providing statistics on the production of various sectors of the economy, GDP is more relevant for analyses related to production activities in the economy, such as employment, productivity, industrial output, investment in equipment and structure.

GDP of Hong Kong is compiled using both the "production approach" and the "expenditure approach". Under the production approach, GDP is an aggregate measure of the total value of net output of all resident producing units. Net output is measured by value added, which is defined as the value of gross output *less* the value of intermediate consumption (that is the value of goods and services used up in the course of production). Each producing unit works to "add value". Summation of the value added of all resident producing units gives an aggregate measure of the total output of the economy which is free from double counting.

It is essential to apply the concept of value added in GDP compilation in order to avoid double counting the value of production. Since various producing units are indeed closely linked in the course of production, the goods or services produced by a producing unit may be used as the intermediate consumption of another producing unit. If the gross outputs of individual producing units are added up directly, the values of certain goods and services will be counted more than once and the GDP so derived will exaggerate the true value of production.

From another angle, goods and services produced will eventually be consumed by final users which will be captured in the total expenditure on final demand for goods and services. Thus, the expenditure approach can also be applied for the compilation of GDP.

Under the expenditure approach, GDP is measured as the total value of goods and services produced for final use, net of their import content.   Goods and services for final use include those consumed by households and government, those for capital formation and those for export.   Goods and services used as input in producing other domestically produced goods and services are excluded.   It is compiled as the total final expenditures on goods and services (including private consumption expenditure[2], government consumption expenditure, gross domestic fixed capital formation, changes in inventories and exports of goods and services), *less* imports of goods and services.

The production and expenditure approaches represent how components within GDP can be viewed from two different perspectives.   In theory, there is only one GDP figure.   However, since the data sources and estimation methods adopted in the compilation of GDP in different approaches are not the same, some statistical discrepancies may exist between the GDP estimates compiled under the two different approaches.

Conceptually, changes over time in GDP at current prices can be factored into two components, reflecting (1) changes in the prices of goods and services produced or purchased, and (2) changes in their volumes.   In order to measure the volume growth of GDP and its components, the effect of price changes has to be eliminated.   The year-on-year change in the volume measure of GDP gives a measure of the "real" growth of an economy.

Note :
(2)   Private consumption expenditure (PCE) refers to the total value of final consumption expenditure on goods and services by households and private non-profit institutions serving households.   It is a comprehensive measure of household overall spending on consumption goods (purchased from various channels including the conventional retail outlets) and services purchased locally or outside Hong Kong.

   PCE is distinguished from retail sales statistics in that:

(i)   retail sales statistics, primarily intended to measure the sales receipts of goods sold by local retail establishments for gauging the short-term business performance of the local retail sector, refer to consumer spending on goods purchased from local retail establishments but do not cover those consumer spending on electricity, gas and water and on various services (such as housing, transportation, education, medical and health care, recreation, entertainment);

(ii)   visitors' spending in Hong Kong is included in the retail sales figure but not in PCE; and

(iii) Hong Kong residents' consumption expenditure abroad is covered in PCE but such spending outside Hong Kong is outside the coverage of retail sales statistics.

To compile the volume measures of GDP and its components, the annually re-weighted chain linking approach is adopted. For a particular year, the volume estimates of major components of GDP revalued at preceding year prices are first derived by "deflating" the current price values of sub-components by the relevant price indices (or in some cases by revaluing the current period quantities at preceding year prices) at the most disaggregated levels. The volume estimate of GDP is then obtained by aggregating the volume estimates of GDP major components revalued at preceding year prices. With the effect of price changes eliminated, the volume estimate reflects the real growth of GDP. The preceding-year weighted volume measures of GDP and its components are chain linked to a selected reference year in order to obtain a continuous time series of the chain volume measures of GDP and its components.

Chart 4.3   Gross Domestic Product of Hong Kong, 2014 – 2024
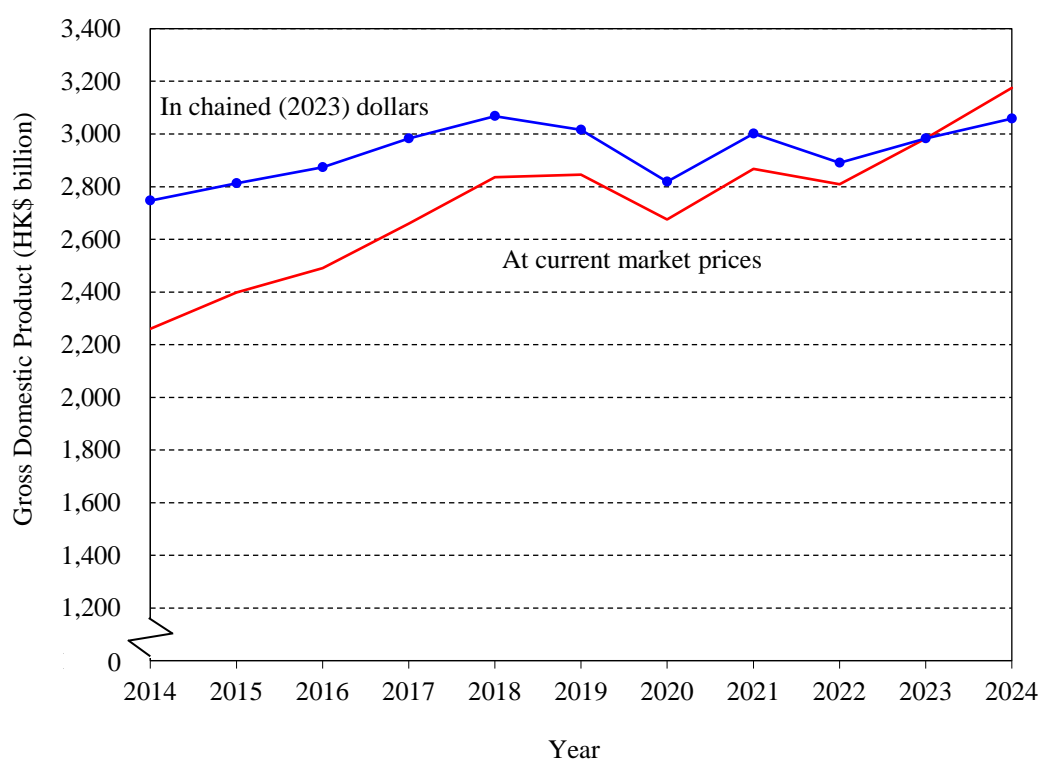
Hong Kong`s GDP for 2024 at current market prices amounted to $3,175.1 billion, about 1.4 times of the corresponding figure of $2,260.0 billion for 2014. GDP for 2024 in chained (2023) dollars was $3,058.1 billion, or 1.1 times of the corresponding figure of $2,746.8 billion for 2014. This represented an average annual growth rate of 1.1% in real terms between 2014 and 2024.

Apart from being a measure of the overall economic performance of an economy, GDP is often used in international comparisons of state of economic well-being. In the light of the variations in the scale of different economies, "per capita GDP" is a more relevant indicator for comparing the economic well-being in different places. Per capita GDP of an economy is obtained by dividing the total GDP in a year by the mid-year population of that economy in the same year.

4 Other official statistics

At current market prices, per capita GDP for Hong Kong increased from $312,609 in 2014 to $421,990 in 2024.   This represented an average annual growth rate of 3.0%. To eliminate the effect of price changes over the ten-year period, the average annual growth rate of per capita GDP in real terms during the period can be referred to, which was 0.7%.

GNI is another useful measure of economic performance.   It measures the total income earned by residents of an economy[3] from engaging in various economic activities, irrespective of whether the economic activities are carried out within the economic territory of the economy or outside.   Therefore, GNI and related statistics are particularly useful for analysing economic situations relating to income of residents, investment, domestic demand and inflation.

GNI is obtained by adding to GDP the primary income earned by residents from outside the economic territory and deducting primary income earned by non-residents from within the economic territory.   Primary income includes income from direct investment, portfolio investment, other investment, reserve assets[4] and compensation of employees.   Similar to GDP, GNI can be compiled on the basis of current market prices and in chained dollars.

Real Gross National Income (RGNI) measures the real purchasing power of the total income earned by residents of an economy, taking into account the relative changes in import and export prices.   RGNI at preceding year prices is obtained by adding the terms of trade adjustment and real net external primary income flows to GDP in volume terms.   The RGNI in chained dollars is calculated using the annually re-weighted chain linking approach, in much the same way as the compilation of the chain volume measures of GDP.

In Hong Kong, the first set of GNI statistics was produced in 1995 in respect of the reference year of 1993.

GNI for 2024 at current market prices was $3,475.9 billion, or about 1.5 times of the corresponding figure for 2014.   RGNI for 2024 in chained (2023) dollars was $3,391.7 billion, or about 1.2 times of the corresponding figure for 2014.

Notes :

(3)   Residents of an economy include individuals and organisations.   According to international standards, for individuals, residents refer to those who normally stay in the economic territory of the economy, irrespective of their nationality.   If an individual has stayed in the economy for at least 12 months or intends to do so, he / she is considered as normally staying in that economy. For organisations, residents refer to those which ordinarily operate in the economic territory of the economy.   The economic territory is the geographic territory under the effective control of the government of that economy.   Conceptually, the residence status of individuals and organisations depends on their centre of predominant economic interest.

(4)   Please refer to the section on "Balance of Payments statistics" on page 79 for more details about direct investment, portfolio investment, other investment and reserve assets.

4 Other official statistics

Chart 4.4　　**Gross National Income of Hong Kong at current market prices, 2014 – 2024[5]**

Gross National Income (HK$ billion)

Year	GDP	EPIF	GNI
2014	2,260	47	2,307
2015	2,398	44	2,443
2016	2,491	63	2,553
2017	2,660	116	2,775
2018	2,835	135	2,970
2019	2,845	144	2,989
2020	2,676	156	2,832
2021	2,868	199	3,067
2022	2,809	186	2,995
2023	2,983	253	3,236
2024	3,175	301	3,476

Gross Domestic Product (GDP)　　Net External Primary Income Flows (EPIF)[6]　　GNI
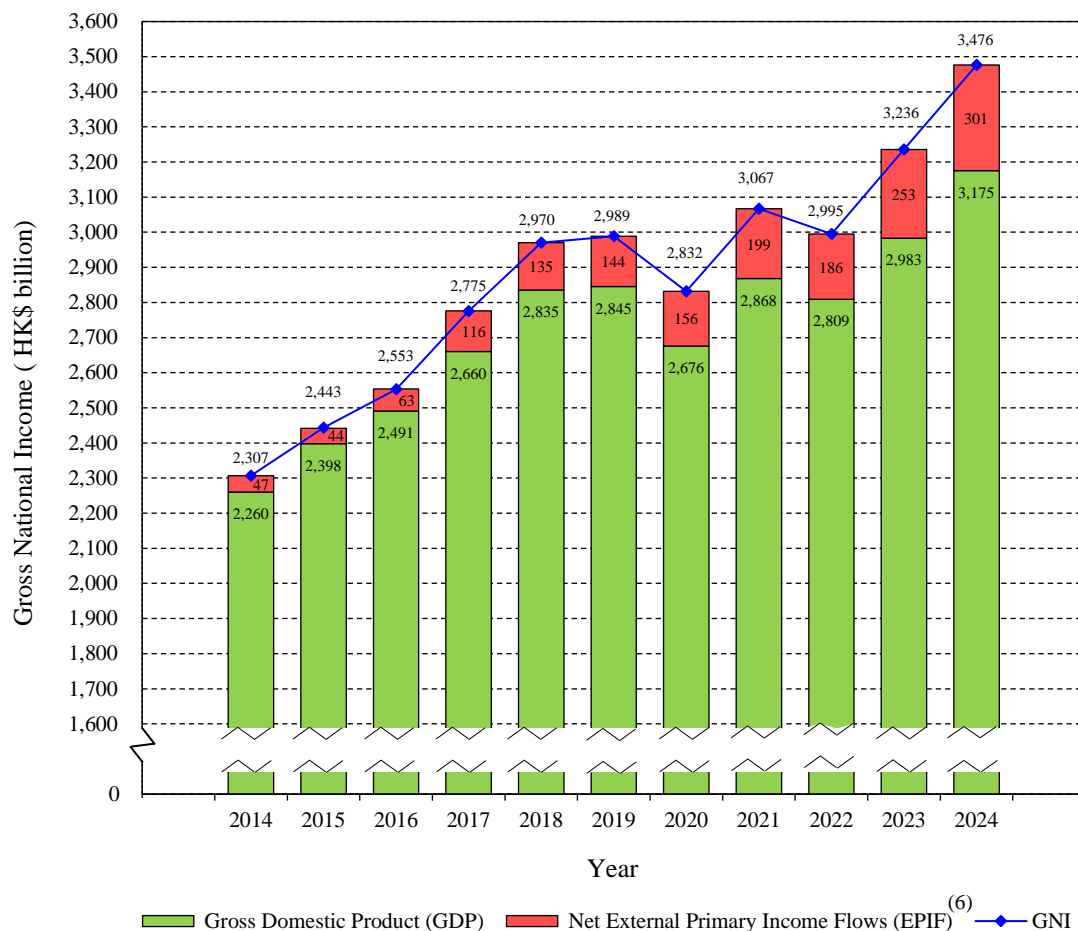
Balance of Payments (BoP) statistics

Just as you would keep track of your income, expenditure, investments, loans, etc., an economy would do the same by conducting "national accounting".   In particular, the economy would keep a BoP account, which records all its transactions with the rest of the world.

Notes :

(5)　　Figures may not add up to the total due to rounding.

(6)　　Net EPIF equals to external primary income inflow minus external primary income outflow.

4 Other official statistics

BoP is a statistical statement that systematically summarises, for a specific time period (typically a year or a quarter), the economic transactions of an economy with the rest of the world (i.e. between residents and non-residents). A BoP account comprises three broad accounts : (a) the current account, (b) the capital account and (c) the financial account.

The current account measures the flows of goods, services, primary income and secondary income between residents and non-residents. Transactions recorded in this account reflect the provision and acquisition of resources by an economy to and from other economies.

The primary income account shows the amounts receivable and payable abroad in return for providing / obtaining use of labour, financial resources or natural resources to / from non-residents. Primary income mainly comprises compensation of employees and investment income. Compensation of employees is the return for the contribution of labour inputs to the production process. Investment income is the return for providing financial resources; it consists of dividends, reinvested earnings, interest, etc.

The secondary income account records current transfers between residents and non-residents. Current transfers are transactions in which real or financial resources that are likely to be consumed immediately or shortly are provided without the receipt of equivalent economic values in return. Examples include workers' remittances, donations, official assistance and pensions. Current transfers are unilateral in nature and are offsetting entries in the BoP account for one-sided transactions.

The capital account measures external transactions in capital transfers, and the acquisition and disposal of non-produced, non-financial assets (such as trademarks and brand names). Examples of capital transfers include forgiveness of debts by creditors and cash transfers involving the acquisition or disposal of fixed assets.

The financial account records transactions in financial assets and liabilities between residents and non-residents. It shows how an economy's external transactions are settled. Transactions in the financial account are classified by function (i.e. the purpose of the investment) into direct investment, portfolio investment, financial derivatives, other investment and reserve assets.

Direct investment refers to external investment in which an investor of an economy acquires a lasting interest and a significant degree of influence or an effective voice in the management of an enterprise located in another economy. For statistical purpose, an effective voice is taken as being equivalent to a holding of 10% or more of the voting power in an enterprise.

4　Other official statistics

Portfolio investment refers to investment in non-resident equity securities and debt securities (e.g. bonds and notes, money market instruments), other than that included in direct investment or reserve assets. Compared with direct investors, portfolio investors have no lasting interest or influence in the management of the enterprises concerned. A holding of less than 10% of the voting power in an enterprise is regarded as portfolio investment.
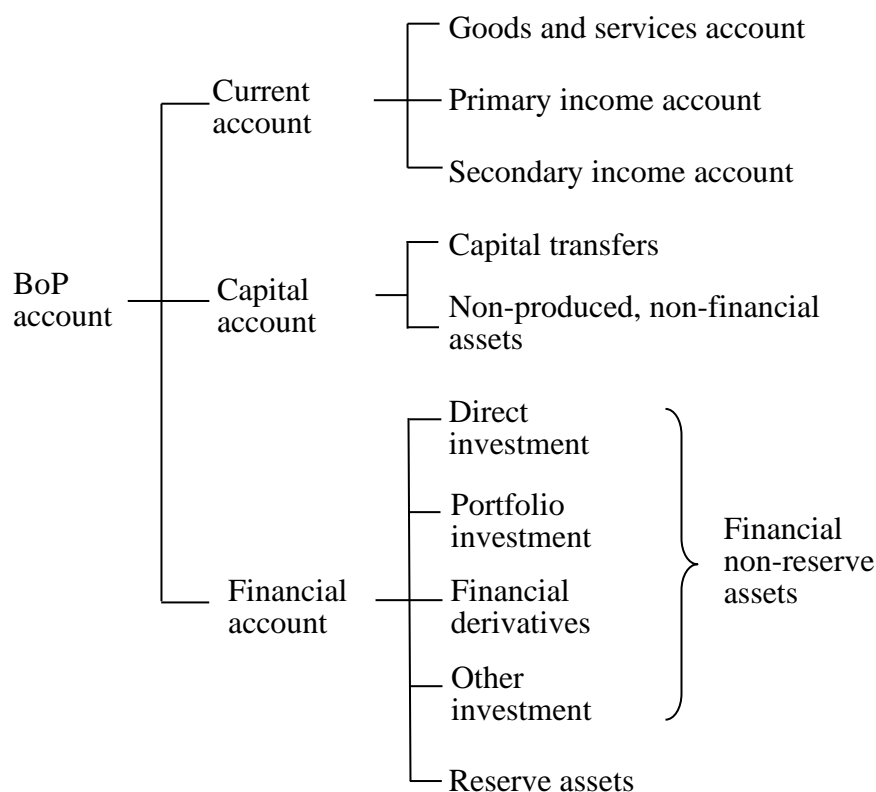
Financial derivatives are financial instruments that are linked to another specific financial instrument, indicator or commodity, and through which specific financial risks (such as interest rate risk, foreign exchange risk, equity and commodity price risks and credit risk) can be traded in their own right in financial markets. Financial derivatives include option-type contracts (e.g. warrants and options) and forward-type contracts (e.g. futures, interest rate swaps, currency swaps, forward rate agreements, forward foreign exchange contracts).

Other investment refers to other financial claims on and liabilities to non-residents that are not classified as direct investment, portfolio investment, financial derivatives or reserve assets. Other investment includes non-marketable loans, currency and deposits, trade credits and advances, and other assets / liabilities.

Reserve assets are external assets that are readily available to and controlled by the monetary authority of an economy (which refers to the Hong Kong Monetary Authority in the case of Hong Kong) for meeting balance of payments financing needs, for intervention in exchange markets to regulate the currency exchange rate of that economy, and for other related purposes (such as maintaining confidence in the currency and the economy, and serving as a basis for foreign borrowing).

4 Other official statistics

The following diagram shows the individual major components of the BoP account :

```
                                    ┌─ Goods and services account
                     ┌─ Current     │
                     │   account ───┼─ Primary income account
                     │              │
                     │              └─ Secondary income account
                     │
                     │              ┌─ Capital transfers
  BoP          ┌─────┤   Capital    │
  account ─────┤     │   account ───┤
               │     │              └─ Non-produced, non-financial
               │     │                 assets
               │     │
               │     │              ┌─ Direct          ┐
               │     │              │  investment      │
               │     │              │                  │
               │     │              ├─ Portfolio       │
               │     │              │  investment      │  Financial
               │     └─ Financial   │                  ├  non-reserve
               │        account ────┼─ Financial       │  assets
               │                    │  derivatives     │
               │                    │                  │
               │                    ├─ Other           │
               │                    │  investment      ┘
               │                    │
               │                    └─ Reserve assets
```

The overall BoP is calculated as: current account balance + capital account balance – change in financial non-reserve assets + net errors and omissions (if any).   Its value is equivalent to the change in reserve assets.   A positive value for the overall BoP corresponds to an increase in reserve assets and represents a BoP surplus, while a negative value corresponds to a decrease in reserve assets and represents a BoP deficit.

BoP statistics of Hong Kong are compiled and disseminated in accordance with the requirements stipulated in the Special Data Dissemination Standard of the International Monetary Fund (IMF).   The annual BoP account of Hong Kong has been compiled since the reference year of 1998, while the quarterly BoP account has been compiled since the reference period of the first quarter of 1999.

In 2024, Hong Kong recorded a BoP deficit amounting to $89.7 billion (2.8% of GDP), compared with a deficit of $79.9 billion (2.7% of GDP) in 2023.

Of the major BoP components, the current account surplus widened to $410.1 billion (12.9% of GDP) in 2024, from $253.1 billion (8.5% of GDP) in 2023.   For financial non-reserve assets, there was an overall increase of $577.0 billion (18.2% of GDP) in 2024, compared with an overall increase of $320.9 billion (10.8% of GDP) in 2023.

4 Other official statistics

Besides the BoP account, the International Investment Position (IIP) statement is also an important component under the framework of BoP statistics.

While the BoP financial account measures transactions in external financial assets and liabilities of an economy occurred during a period, IIP reflects the level of such assets and liabilities at a particular time point.   The former involves a flow concept, while the latter refers to a stock concept.   Transactions are economic flows during a specific time period.   On the other hand, stocks are positions in, or holdings of, assets and liabilities at a particular time point.   Transactions in assets and liabilities, among other factors, will affect the stock of these assets and liabilities.   In addition to transactions, price changes and exchange rate variations as well as other adjustments (e.g. reclassifications, unilateral cancellation of debts) also have an impact on the value of the stock of an economy's external financial assets and liabilities when expressed in the local currency of the economy.

C&SD started to release annual IIP statistics for Hong Kong in mid-2002.   Time series on annual IIP statistics since the end of 2000 and quarterly IIP statistics since the first quarter of 2010 are available.

At the end of 2024, Hong Kong's external financial assets and liabilities amounted to $52,514.2 billion and $36,641.3 billion respectively.   After netting out the external financial liabilities from the external financial assets, Hong Kong stood as a net creditor, with net external financial assets amounting to $15,872.9 billion (equivalent to 5.0 times of GDP).

BoP and IIP statistics provide an integrated framework for the analysis of an economy's external economic relationships.   They are important for monetary and financial monitoring and policy deliberations in both the domestic and international contexts.

The world economy is becoming increasingly integrated through international trade and investment flows.   Globalisation of economic activities is a topic of concern to both the government and private sector of an economy.   BoP statistics provide a lot of useful information required for the study of an economy's external orientation.

Besides, previous international financial crises have aroused increased interest in the analysis of IIP statistics, through which an economy's external vulnerability can be assessed.   Analyses on the sizes of the external assets and liabilities by type of investment, by financial instrument and by sector allow us to understand which sector in the economy is most vulnerable.

4 Other official statistics

Labour statistics

Labour statistics are very useful economic statistics regarding the labour force and labour market of Hong Kong.   They reflect the characteristics of the economically active population and their economic activities.   Since working is also an important aspect of one's life, labour statistics are considered as social statistics as well.

The labour force participation rate (LFPR) is obtained by expressing the size of the labour force as a percentage of the population of working age, i.e. population aged 15 and over.   This is a measure of the working age population's propensity to be in the labour force.   The size of the labour force of Hong Kong in 2024 was 3.81 million and the LFPR was 57.0%.

The unemployment rate, in particular, is one of the most important indicators describing the labour market situation.   It refers to the percentage of "unemployed population" in the "labour force".   There was a significant improvement in the labour market during 2014 and 2018, with the unemployment rate gradually dropping from 3.3% to 2.8%.   However, owing to the impact of the COVID-19 pandemic, the unemployment rate increased sharply to 5.8% in 2020.   Along with the steady recovery of the economy from the pandemic in general, the unemployment rate fell gradually to 2.9% in 2023 and edged up to 3.0% in 2024.

As the unemployment rate is subject to effects of seasonal variations (e.g. there are generally more job-seeking graduates entering the labour market in late summer, leading to a higher unemployment rate), short-term fluctuations, say between adjacent months or quarters, in the unemployment rate do not necessarily signal an actual change in the labour market conditions.   Hence, when studying the underlying trend of unemployment, it is common to use the seasonally adjusted unemployment rate, which is obtained by using statistical methods that estimate and remove the seasonal variations from the original figures.

The definition used for measuring unemployment follows closely that recommended by the International Labour Organization (ILO).   According to the definition, a person aged 15 or over is classified as unemployed if he / she satisfies all of the three following criteria :

(a)   has not had a job and has not performed any work for pay or profit during the 7 days before enumeration;

(b)   has been available for work during the 7 days before enumeration; and

(c)   has sought work during the 30 days before enumeration.

However, if a person aged 15 or over fulfils conditions (a) and (b) above but has not sought work during the 30 days before enumeration because he / she believes that work is not available, he / she is still classified as unemployed, being regarded as a so-called "discouraged worker".

It should be emphasised that "whether available for work" is an important condition for defining unemployment. Those persons who are not available for work because of one reason or another (e.g. being fully engaged in household duties) are not classified as unemployed even though they are without work, as they do not fulfil condition (b) of the above definition of unemployment, i.e. not available for work during the 7 days before enumeration.

When looking at the unemployment figures, it should be noted that "unemployment" is a state of affairs, which is not equivalent to the event of "losing a job". For persons who have been dismissed from their jobs or who have left their jobs for certain reasons, but have managed to take up another job within a short period of time, they may not be counted in the unemployed population by definition, even though they have experienced the event of "losing a job" during the period.

Chart 4.5   Unemployment rate in Hong Kong, 2014 – 2024
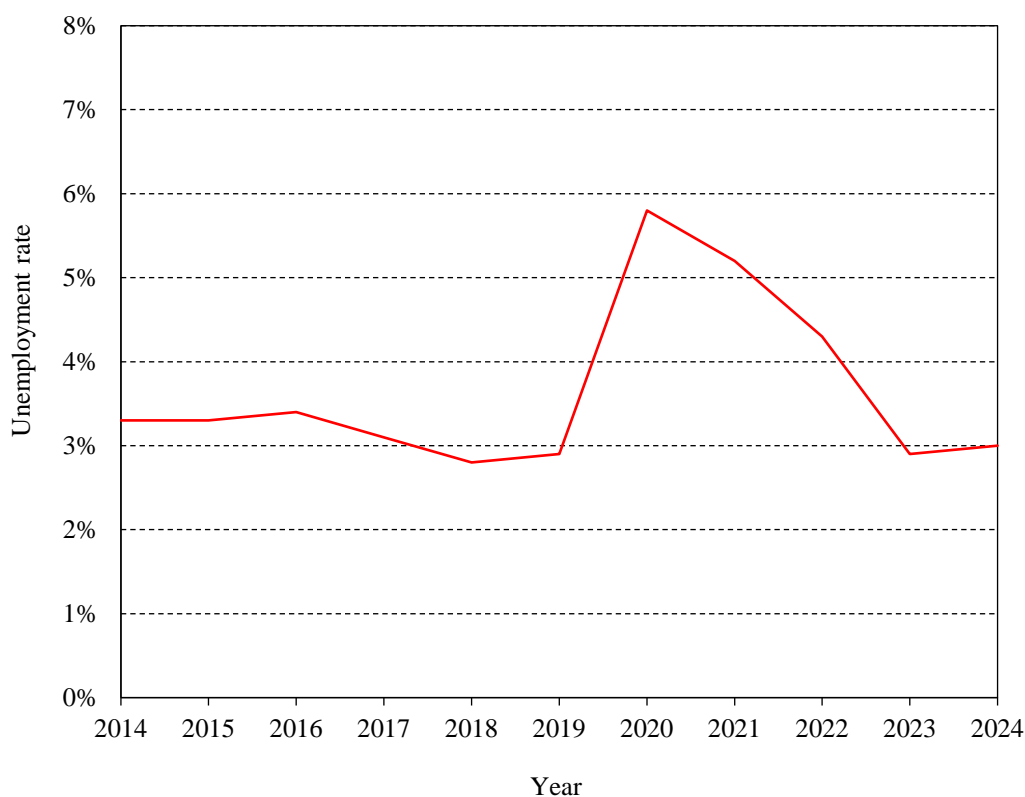
4 Other official statistics

Statistics in respect of "underemployed persons" also provide another useful piece of information about the labour force.   The underemployed persons are defined as those employed persons who have involuntarily worked less than 35 hours during the 7 days before enumeration and have sought additional work during the 30 days before enumeration, or have not sought additional work but have been available for additional work during the 7 days before enumeration.   Those employed persons who worked less than 35 hours per week but have not been available for additional work and have not sought additional work (e.g. full-time teachers in bi-sessional schools) are not classified as underemployed.

Statistics on labour force, employment, unemployment and underemployment are compiled by C&SD based on the data collected from a continuous General Household Survey (GHS) conducted on households (and their members).   The sample size of the GHS in a three-month period is about 26 000 households and the survey methodology adopted is in line with international standards and practices.

Apart from the aggregate figures mentioned above, a large amount of statistics analysed by various groupings (e.g. industrial and occupational distributions of the employed population) are also available from the GHS.   These statistics are provided to the government bureaux and departments concerned for reference and are also published in the Quarterly Report on General Household Survey, which is available to the public on the C&SD website.

Furthermore, statistics on employment (i.e. number of employees and vacancies in different industries) and wage and payroll statistics are also compiled by C&SD. They are commonly referred to by enterpreneurs and human resources management personnel, since they provide information which is very useful for formulation of personnel management strategies.   For example, firms can compare their staffing and vacancy situations with those of the industry taken as a whole or with those of other industries.   They can also compare wage levels of their employees with others in the same industry.   In addition, C&SD also compiles statistics on the level and distribution of wages of all employees in Hong Kong, as well as their employment and demographic characteristics.   These statistics are essential inputs for analyses related to the Statutory Minimum Wage.   They are also useful for studies on labour-related topics by the Government and the private sector.   The relevant data are collected from surveys conducted on business establishments.

Other official statistics

Price statistics

The Consumer Price Index (CPI) is another widely quoted item of official statistics. It is an important economic indicator which measures the changes over time in the price level of consumer goods and services generally purchased by households.

The year-on-year rate of change in CPI is widely used as an indicator of the inflation experienced by consumers. The Government and some private companies often make reference to the rate of change in CPI when considering adjustments to wages, salaries and various kinds of charges and allowances.

The prices of some consumer goods and services may be subject to seasonal variations causing CPI to rise or fall. Therefore, when studying changes in CPI, it is common to refer to the year-on-year rate of change (e.g. comparing CPI of a month with that of the same month in the preceding year) so as to eliminate the effects of seasonal factors. Another alternative is to use the deseasonalised CPI, which is obtained by using statistical methods that estimate and remove the seasonal variations from the original index.

Households in different expenditure ranges have different expenditure patterns. Different series of CPIs are therefore compiled by C&SD to reflect the impact of consumer price changes on households in different expenditure ranges. The CPI(A), CPI(B) and CPI(C) are compiled based on the expenditure patterns of households in the relatively low, medium and relatively high expenditure ranges respectively. The Composite CPI, which is compiled based on the overall expenditure pattern of all these households taken together, reflects the impact of consumer price changes on the household sector as a whole.

Two types of data are required for compiling the CPI, namely price movements of consumer goods and services and their expenditure weights. Given the wide variety of consumer goods and services, it can be imagined that a lot of price data must be collected for the compilation of CPI. Indeed, C&SD collects over 40 000 price quotations each month from some 3 500 local retail outlets and service providers for the purpose of compiling the index. In response to the increasing popularity of online purchases, price quotations are also collected from online outlets (both local and non-local) commonly patronised by households in Hong Kong for the compilation of CPI.

An enumerator is using a mobile tablet to collect retail prices of commodities for compiling the Consumer Price Index.

4 Other official statistics

As households spend more on some items and less on the others, similar price movements in different items may have different effects on the overall price change. Therefore, a weighting system which shows the relative importance, in terms of expenditure, of individual items of commodities and services bought by households is required for the compilation of CPI.   The weight of each item is the share of the item in the total expenditure of households.

In Hong Kong, the expenditure weights for the compilation of CPI were traditionally updated every five years, mainly based on the results of the Household Expenditure Survey (HES) conducted at the same interval.   Since 2021, C&SD has adopted an enhanced framework to annually review and update the expenditure weights, leveraging up-to-date data from a diverse range of sources (such as retail sales, restaurant receipts, and national account statistics).   Based on the annual review results, C&SD uses the updated expenditure weights (with the previous year as the reference period) to compile CPI, starting from the reference month of April each year.

When the results of HES are available in a given year, C&SD integrates them to comprehensively update the expenditure weights for each CPI series and their respective commodity / service items, thereby enhancing accuracy at the detailed level to effectively capture changes in household consumption patterns.

The annual rate of increase in CPI modertated from 2015, due to the continued softening in international food and commodity prices as well as the strong US dollar. This rate of increase picked up slightly in 2018 and 2019, and then eased again in 2020 amid the COVID-19 pandemic.   During 2021 to 2023, the annual rate of increase in CPI picked up slightly.   The rate of increase was mild in 2024.

4 Other official statistics

Chart 4.6 **Composite Consumer Price Index and its year-on-year rate of change, 2014 – 2024[7]**
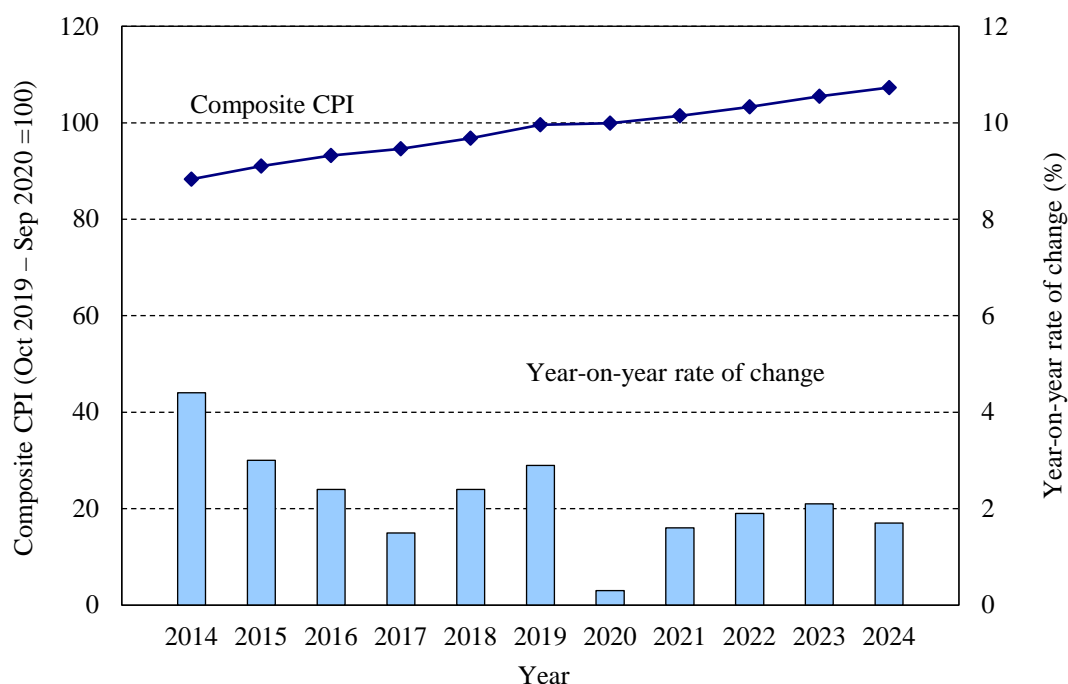
CPI reflects the collective experience of inflation for all households in general. It may not correspond to the experience of an individual household. As each household has its own expenditure pattern and prices of different consumer goods and services increase or decrease at varying rates, inflation is not experienced by all households to the same extent. Hence, individual experience of price changes may differ from movements of CPI.

Besides, people tend to be psychologically more aware of drastic price changes which they experience directly and pay little notice to moderate or small price changes. Even individual members of the same household may feel different impacts of price changes. Therefore, while personal experience may be subjective or biased, CPI provides an objective assessment of price changes experienced by households generally.

Another point to note is that CPI measures changes in the price level of consumer goods and services purchased by households. If we buy more goods or consume services of higher quality than before, then the increase in expenditure is not solely caused by price increase.

Note:
(7) From October 2020 onwards, the year-on-year rates of change are derived from the 2019/20-based CPIs. The year-on-year rates of change before October 2020 were derived using the index series in the base periods at that time (e.g. the 2014/15-based index series for compiling the rates of change during the period from October 2015 to September 2020), compared with the index a year earlier in the same base period.

4   Other official statistics

Operating statistics of businesses

Statistics from economic surveys conducted periodically by C&SD provide information about business trend, cost structure and profit situation in various economic sectors.   Firms can make use of the statistics to compare their own performance against the general situation within their specific sectors and adjust their business strategies accordingly.

Other economic statistics

Shipping statistics are compiled by C&SD in collaboration with other parties.

(B) Social statistics

Social statistics broadly comprise the following areas : population statistics, education statistics, transport statistics, housing statistics, medical and health statistics, social welfare statistics and crime statistics.

Population statistics

Population statistics have already been discussed in detail in Chapters 1 to 3.   It may be emphasised again here that population statistics, which depict the size, growth and socio-economic characteristics of the Hong Kong population, are among the most useful items of statistical information for government administrators.   They are of prime importance in the formulation and administration of government policies in such areas as education, housing, transport, medical and health, and social welfare services. For businesses, population statistics are useful in identifying potential target markets more accurately and in supporting better investment decision-making.

Other social statistics

Education statistics, transport statistics, housing statistics, medical and health statistics, social welfare statistics and crime statistics are basically compiled by the respective government bureaux and departments to meet specific planning and administrative needs.   They are also useful to the Government as a whole in formulating broad-range policies.   Coordination is necessary to ensure that statistics relating to different areas can be used together in a compatible way for planning activities which cut across various facets of the society.

On education, there are three main areas of statistics, viz. pupils, teachers and school place provision.   The Education Bureau compiles a lot of statistics which are very useful for formulating policies and planning facilities.

Regular public transport operating statistics and related statistics on transport are compiled.   These provide a basis for understanding the transport and traffic situation of Hong Kong and for transport planning.

Housing statistics cover housing stock and housing production in both the public and private sectors.   They also relate to the situation in various housing estates.   They are very useful in reflecting the housing conditions of the people of Hong Kong and are important references when planning for housing development is undertaken.

Medical and health statistics provide information about births, diseases, deaths, health-related behaviours and health services. They facilitate a better understanding of health status of people in Hong Kong and are useful to the Government for disease surveillance and control, and formulation of health measures.

Social welfare statistics attempt to establish the number and characteristics of individuals in the community who require assistance, in particular the aged, the unemployed, the disabled, the orphaned or deserted children, the delinquent and people in families with special problems.   These statistics are useful in planning, review and monitoring of the provision of social welfare services.

Crime statistics are compiled on the basis of crimes reported to the police, which partially reflect the state of law and order in the society.   Some crimes are not reported and statistics on unreported crimes may be collected through the conduct of a survey on crime victimisation periodically.

From a general data user's perspective, social statistics provide an objective and in-depth view of the respective facets of the society, as they can effectively reflect developments and shortfalls in various areas of living conditions and provision of social services.

Ways of obtaining official statistics

C&SD disseminates official statistics through different media, with emphasis on the service principles of friendly access and prompt delivery.

For statistics of common interest, C&SD issues press releases to the media.   The schedule of regular press releases on statistical data in each calendar year is announced to the media in September of the preceding year.   The schedule is also available to the general public for reference on the C&SD website.

Statistics which should be of general public knowledge are also uploaded on the C&SD website under the "Statistics" section where members of the public can browse and download different types of statistical products of C&SD.

To cater for the changing technological environment and service needs, continuous efforts have been made in enhancing the contents and functionality of the C&SD website with a view to further promoting better understanding and application of statistics in the community.   For example, Web Tables and Web Reports have been released for the public to access statistics through desktop and mobile devices conveniently, and download the statistics therein in various formats (XLSX, CSV and XML).

4   Other official statistics

To support the government's open data policy, statistical products and press releases available on the C&SD website have also been listed on DATA.GOV.HK for free download and re-use by the public for both commercial and non-commercial purposes. In addition, C&SD has announced Annual Open Data Plan regularly to set out the datasets already released and planned to be released on DATA.GOV.HK.

Proper understanding of the concepts and definitions of different kinds of statistics is imperative for their correct interpretation and application. Apart from providing statistical information to the public, C&SD is also prepared to give advice on the interpretation and application of statistics so as to maximise their utilisation to users. In case users require assistance or statistics more detailed than those contained in the press releases and publications of C&SD, they are welcome to approach C&SD for assistance by telephone, facsimile, letter or electronic mail. A list of telephone numbers, facsimile numbers, office addresses and e-mail addresses is given at the C&SD website.

4 Other official statistics

Further information

The above contents present only part of the economic and social statistics produced by C&SD and various government bureaux and departments.   For further information regarding the official statistics covering various social and economic aspects of Hong Kong (e.g. latest statistics, statistical reports, concepts and methods), please visit the following sections of the C&SD website :

Labour force, employment and unemployment
External trade
National accounts
Balance of Payments
Prices
Business prospects
The Four Key Industries and other selected industries
Energy
Housing and property
Public finance, money and market
Science and technology
Industry

Tourism
Education
Health
Social welfare
Law and order
Culture, entertainment and recreation
Environment, climate and geography

Interactive quiz

You may test the knowledge you have learnt in this Chapter by trying this interactive quiz.   Answers to the questions can be found in the relevant paragraphs of this Chapter.

4　Other official statistics

Exercise

Please give a ✓ in the appropriate box (□) for the correct answer.

1. The population of Hong Kong in mid-2024 was

   □　5.75 million
   □　6.50 million
   □　7.52 million
   □　7.24 million

2. <u>Crude birth rate in Hong Kong</u>

<u>Year</u>	<u>(Number of births per 1 000 population)</u>
2015	8.2
2024	x

   $x =$

   □　7.6
   □　4.9
   □　9.3
   □　9.8

3. If the crude death rate in a given year was 5.0 deaths per 1 000 population and the crude birth rate was 7.2 births per 1 000 population, the rate of natural change per 1 000 population in the period was

   □　-2.4
   □　　2.2
   □　-12.0
   □　　12.0

4. Most of the visitors visiting Hong Kong in 2024 came from

   □　United States of America
   □　Japan
   □　The Mainland
   □　Europe

5. The population in mid-2019 = a; and
   the population in mid-2024 = b.
   The compound average growth rate per annum of the population in this period was

   ☐ $\left(\sqrt[4]{\dfrac{b}{a}} - 1\right) \times 100\%$

   ☐ $\dfrac{\left(\dfrac{b}{a} - 1\right)}{4} \times 100\%$

   ☐ $\left(\sqrt[5]{\dfrac{b}{a}} - 1\right) \times 100\%$

   ☐ $\dfrac{\left(\dfrac{b}{a} - 1\right)}{5} \times 100\%$

6. In 2024, the size of the labour force in Hong Kong was

   ☐ 3.78 million
   ☐ 3.88 million
   ☐ 3.95 million
   ☐ 3.81 million

7. Which category of persons is regarded as economically inactive?

   ☐ Unpaid family workers
   ☐ Employers
   ☐ The unemployed
   ☐ Full-time home-makers

8. Which of the following is not an approach in the compilation of the Gross Domestic Product?

   ☐ Expenditure approach
   ☐ Production approach
   ☐ Industrial approach

Part II

Survey methods and basic statistical concepts

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5 Survey methods

Introduction

Statistics on births, deaths and net movements used in making population projections are compiled from birth and death registration records and immigration clearance records. In addition, information on the latest size and age-sex structure of the population and on various other aspects of persons in the population has to be obtained. This can be achieved by conducting a population census or by-census.

Administrative records, such as the registration records mentioned above, and survey results, such as those obtained through a population census / by-census, are the typical sources of data from which statistics are compiled.

Administrative records provide an economical and accurate data source. However, since they are primarily intended for certain specific purposes, they may not completely meet the statistical requirements, unless special provision has been made to cater for such requirements. Naturally, there are situations where meeting such requirements would mean distorting the original purposes of the administrative records too much. In such circumstances we would have to give up the idea of generating the required statistics as a by-product of the administrative system, and resort to other means of data collection.

Surveys are another important means of data collection whereby the objects of our study are interviewed, observed or given questionnaires to fill in. If we design the survey in such a way that all objects of study will be contacted, one way or another, the survey is specifically referred to as a "census". If only a sample of the objects is taken for data collection later on, then the survey is more clearly described as a "sample survey". The language in this aspect is, however, a little loose sometimes. When the word "survey" is used, quite often it is implied that only a sample is taken.

Census versus sample survey

When deciding whether a census or a sample survey should be carried out, a number of factors should be considered. For studies in which the "population" (i.e. the group of persons or other objects we wish to study) is large, a proper sample survey, as compared to a census, is very useful for cutting down the resources required, including money and manpower, and for reducing the overall burden imposed on the persons / objects to be studied. Another benefit of carrying out a sample survey instead of a census is that we can collect, summarise and analyse data more quickly when the information is urgently needed.

5 Survey methods

On the other hand, a complete census can be considered if very accurate information is required on small sub-divisions of the "population" under study, and when comprehensive data on the "population" are needed for forming a benchmark to support further statistical analyses, such as projections.

Population census and by-census

In a population census, basic information is collected from all persons in the population of a country / territory while in a population by-census, only a large sample of persons is covered.   Usually a population census is conducted once every ten years.   A by-census may be conducted in between two censuses to update the information obtained from the last census.

Because of its long history world-wide, and when there is not likely to be confusion, "population census" is abbreviated as "census" for convenience.   Thus, it should be noted that there can actually be census of agriculture, census of industry and so on, apart from population census.

Population censuses and by-censuses taken in Hong Kong

The history of population census in Hong Kong can be traced back to 1841.   Earlier censuses were simple, with headcounts taken only.   The "1961 Census" was the first population census in which detailed information was collected on a broad spectrum of demographic, social and economic characteristics of the population.   Since then, Hong Kong has been conducting a full population census every 10 years, and a population by-census on the basis of a sample between two full censuses.   Population censuses were conducted in 1961, 1971, 1981, 1991, 2001, 2011 and 2021.   Population by-censuses were conducted in 1966, 1976, 1986, 1996, 2006 and 2016.

Details of the last population census are available in the section "The 2021 Population Census" in Chapter 1.

To modernise the population censuses in Hong Kong, reduce respondent burden in completing the questionnaires as well as the operational risks and costs in the long run, the following re-engineering initiatives will be implemented from the 2026 Population Census onwards :
(1)   conducting only a sample enumeration using the "long form" every 5 years, in lieu of a full census once every 10 years and a by-census in between;
(2)   extending the data collection period from 1.5 months to 1 year; and
(3)   using government administrative data more extensively to supplement survey data.

5 Survey methods

Objectives of conducting population censuses

In a dynamic city like Hong Kong, many changes in major characteristics of the population occur in a relatively short span of time.   Up-to-date and reliable information on the size, composition and geographical distribution of the population is necessary for forward planning by the Government.   Moreover, as Hong Kong develops into an international business centre, census data are widely used in assessing market conditions and making investment plans.   Such data will also help researchers in studying important social issues.
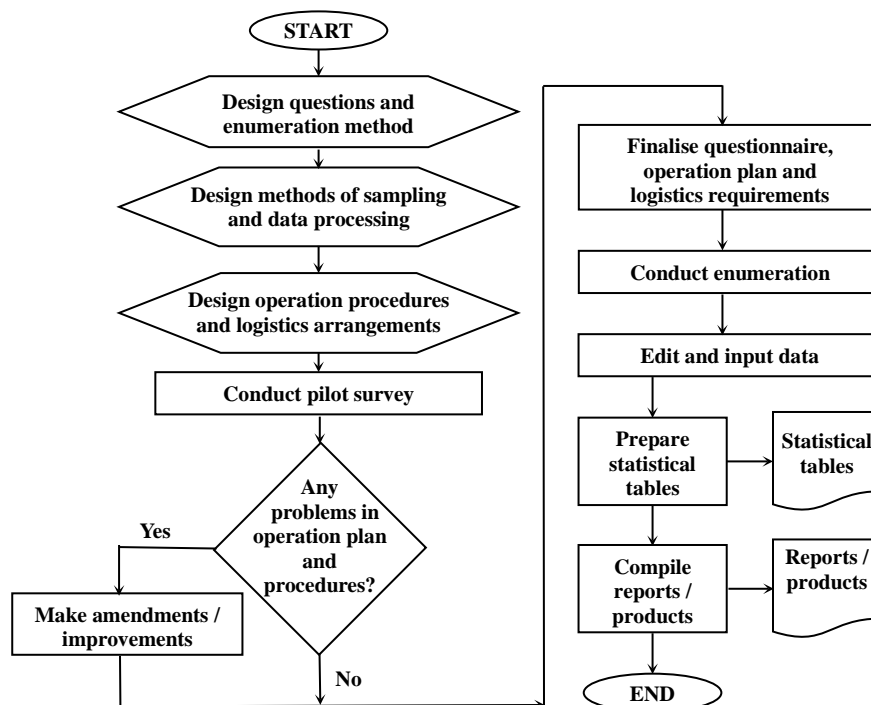
Preparation for conducting a population census

Conducting a population census involves a vast amount of preparatory work.   These preparatory activities include :

(1)   geographical work, such as preparing maps and lists of places;
(2)   determining the data needs of the Government, business sector and other sectors;
(3)   determining the questions to be included and the statistical tables to be compiled;
(4)   designing the sampling methodology and method of estimation;
(5)   deciding on the method of enumeration, e.g. whether field workers are to conduct household interviews or household members to fill in questionnaires by themselves, as well as detailed plans in applying online questionnaires / telephone interviews; and
(6)   planning the data processing procedures.

To ensure the effectiveness of the population census operation plan, a pilot survey will be conducted during the preparatory stage of every population census so as to test the questionnaire and operation procedures as well as to confirm the logistics requirements. Based on the results of the pilot survey, the operation plan is then amended / improved as appropriate for actual implementation.   The pilot survey is particularly important for ensuring the smooth conduct of large scale surveys (such as population censuses) which involve the mobilisation of a large number of workers and other resources.

5   Survey methods

Chart 5.1　　**Main steps in planning and conducting a population census**

Census order

Furthermore, legislation is needed to provide a legal basis for conducting the population census.　Under the Census and Statistics Ordinance (Chapter 316), C&SD is vested with the authority to conduct population censuses.　The legislation requires all persons to give particulars for themselves and their dwelling places in the data collection process.　It also lays down penalties for those who refuse to do so.　On the other hand, it contains strict provisions for safeguarding the confidentiality of the information supplied by individual households and persons, which assure that such information will only be used for compiling statistics and will not be released to any parties, including other government departments.

Public support for the population census

While there are legal provisions in relation to the conduct of population censuses, it is important for the community to realise that the findings of the census are crucial to the future planning of Hong Kong and that public participation and cooperation are essential in making the operation successful.

In the 21C, a considerable number of students and teachers were recruited as temporary field workers to undertake various tasks.　They thus had a chance to participate actively in this important project.　Training on interviewing techniques and other necessary skills was provided.　Some school premises were used as field centres for the field operation.

5 Survey methods

Processing of population census data

After raw data are collected from households and individuals in the population, they must undergo a number of processes before statistical outputs can be produced. The raw data are first edited to correct for inconsistent answers. They are then converted into codes for input into the computer. Finally, various computations are performed by the computer to produce statistical tables in appropriate formats.

Dissemination of population census results

Results of the more recent rounds of population census and by-census are published in the forms of summary reports and detailed reports. Users can refer to them easily and make use of the results for various purposes. Results of the 21C are obtainable from the thematic website of the 2021 Population Census.

Other surveys

Apart from population censuses, C&SD and other government bureaux and departments also carry out other surveys to collect various types of social and economic data.

Examples of surveys carried out by C&SD are :
– General Household Survey
– Monthly Survey of Retail Sales
– Monthly Retail Price Survey
– Household Expenditure Survey
– Quarterly Survey of Employment and Vacancies
– Annual Earnings and Hours Survey
– Annual Survey of Economic Activities

Examples of surveys carried out by other government bureaux and departments are :
– Enrolment Survey (by Education Bureau)
– Traffic Census (by Transport Department)
– Health Manpower Survey (by Department of Health)

5 Survey methods

Important points to note in conducting surveys

In planning and conducting surveys, there are a number of major points which need to be carefully considered :

(A)   Overall planning

    (1)   The objectives of the survey should be clearly specified.

    (2)   The population covered by the survey should be clearly defined with reference to the survey objectives.   "Population", in the context of a survey, refers to the totality of objects under study.   The objects may be human being or otherwise.

    (3)   It should be ensured that respondents of the survey are able to provide the information required.

    (4)   Adequate resources such as time, money and manpower should be available for the survey.

    (5)   In conducting a survey, professional advice is often required and should preferably be sought at an early stage to ensure that the various steps of a survey are properly planned.   This is because rectification is normally very difficult after the survey is completed and its results are found to be invalid.

(B)   Design and selection of sample (in case a sample survey instead of a census is to be conducted)

    (1)   Probability sampling methods should be used as far as practicable, instead of non-probability sampling methods.   In probability sampling methods, every unit in the population has a known and non-zero probability of being sampled.   This allows researchers to draw inferences scientifically from the sample results about the entire population.   Examples of probability sampling methods include simple random sampling, stratified random sampling, systematic sampling and cluster sampling.

    (2)   Non-probability sampling methods such as haphazard sampling (i.e. picking the sampling units as they come along or as convenient), quota sampling (i.e. selecting sampling units according to some criteria, such as 50% being male and 50% being female, but the selection of units is at the discretion of the interviewers) and self-initiated telephone / online polling (i.e. interested individuals dial a telephone number / visit a website at their own initiative to give views) should be avoided because such methods normally induce biases to the survey results.

5 Survey methods

(3) The sample size depends on the characteristics of the population under study, the choice of sampling method and the desired precision level of the estimates.   It can be worked out using established statistical methodology. In general, a larger sample size is needed if estimates of higher precision are required.

(4) Substitution of sampling units or respondents should not be done once they have been selected according to a pre-set sampling method.

(C)   Questionnaire design

(1) The questionnaire used for a survey should contain questions which are relevant, precise, unambiguous, well-sequenced and appropriately phrased. If the questions involve tapping of opinions, care should be taken to avoid questions which may lead respondents towards the direction of a certain answer or questions being loaded in favour of a particular response.

(2) Requiring respondents to provide an answer while they are unable to do so or genuinely have no opinion will result in invalid answers.   Answers like "don't know" or "no opinion" should be allowed in the questionnaire, as appropriate.

(3) The questionnaire should not be too long.

(4) To ensure the effectiveness of the questionnaire, a pilot test of the questionnaire should be conducted on potential respondents.

(D)   Collection of raw data

(1) The mode of data collection, such as the use of personal interviews, telephone interviews, online questionnaires or self-administered questionnaires by mail, should be carefully selected by considering the respondents' willingness to cooperate, the degree of complexity of the subject of enquiry and other relevant factors.

(2) Various arrangements related to fieldwork should be carefully planned in order to ensure smooth and efficient operation.   Fieldwork procedures should be thoroughly tested before implementation.

(3) The interviewers should be carefully briefed on the concepts and definitions of terms used in the survey and properly trained on the survey procedures before they start working.

(4) Interviewers should ensure that respondents understand the questions. Probing should be done where necessary.   This, however, should not be overdone, lest unnecessary influence will be exerted on respondents.

(5) Every effort should be made to minimise non-contact or refusal cases of respondents because a low response rate may induce a serious bias in the survey results.   Adequate publicity of the survey, proper introduction of the surveying organisation, clear identification of interviewers, and giving advance notice to sampled respondents should help.   Arrangements should also be made to follow up on non-contact respondents and to persuade uncooperative respondents to participate.

(6) The identity and information supplied by individual respondents should be kept confidential.   With such assurance, respondents would feel at ease and would be more willing to provide individual or organisational information and opinions.   It should be emphasised that survey is a kind of statistical work and not an investigation on individuals.

(E) Processing of raw data and compilation and analysis of statistics

(1) Raw data should be carefully and thoroughly checked before compilation of statistics.

(2) Appropriate statistical methodology should be adopted in compiling and analysing the data.   In particular, in case a sample design has been used where the probability of selection of every individual respondent is not equal, it is necessary that proper weighting methods are applied to survey results to give unbiased population estimates.

(3) Due deliberation should be made to decide on an appropriate sub-grouping scheme in analysing survey results at disaggregate levels, taking into account the precision of estimates derived from the sample.

(F) Dissemination of survey results

(1) It is a usual practice to publish the survey results if the subject of the survey is related to a topic of public interest.

(2) The survey results should be presented in the form of aggregate statistics so that information supplied by individual respondents would not be disclosed.

(3) A comprehensive survey report should contain details about different aspects of the survey, in particular details on population coverage, sample design, sample size, sampling error, response rate and likely sources of non-sampling error.   Where appropriate, specimen of the questionnaire should be attached.

(4) When the survey results are released to the media, sufficient details on the survey methodology should be provided in addition to survey findings such that the media may report both.   Otherwise, members of the public will have no basis to assess the reliability of the findings.

5 Survey methods

Assessing quality of survey results

There are many factors that will affect the quality of data obtained from a sample survey. In assessing the data quality of a survey, at least the following issues should be considered :

(1) Whether the sample of the survey is selected in accordance with a probability sampling method;
(2) Whether the sample size is sufficiently large;
(3) Whether the questionnaire is well designed; and
(4) Whether the response rate of the survey is sufficiently high.

A well-designed and properly selected sample is crucial to the quality of results derived from a survey. Nevertheless, some survey-takers may not appreciate the need for conducting surveys scientifically. "Street-corner surveys" and "self-initiated telephone / online polling" that we frequently come across are examples of non-scientific surveys.

In "street-corner surveys", interviewers pick on passers-by haphazardly. Even though sometimes there are stipulations such as 50% of interviewees being male and 50% being female (such selection procedures are known as "quota sampling"), there is still much discretion for the interviewers to pick the interviewees within such stipulations. Thus, interviewees who seem to be more approachable will have a much greater tendency to be selected generally. Moreover, out of convenience, busy street corners are often chosen for interviewing and thus people who tend to avoid busy spots will have little chance of being selected. Therefore, samples taken through these surveys may not be representative of the target population.

Also, respondents of "self-initiated telephone / online polling" are not selected through an objective method. Because of this, we can expect that people who tend to be more concerned about the subject and have stronger views will be more willing to call / go online while others may not. Obviously, data so obtained cannot be taken for granted to represent the target population.

In a scientific survey, the sample should be selected from a well-defined population by a probability sampling method. Only when probability sampling method is employed, statistical inference based on the data obtained from the sample can be appropriately made.

5 Survey methods

Apart from using a scientific sampling method, the size of the sample (i.e. the number of selected respondents) of a survey should be sufficiently large. Otherwise, the results of the survey may be subject to substantial error. One should also note that sometimes even though the sample size may be large enough for estimating the characteristics of the "population", it may not be large enough for estimating the characteristics of certain sub-groups. Consideration for providing estimates pertaining to certain sub-groups should take into account the precision of the corresponding estimates.

In surveys, data are very often collected by way of a questionnaire, though sometimes by observations. Hence, the design of the questionnaire will affect directly the quality of data to be collected. As an example, consider the question : "Many people are against smoking. Do you smoke?" This is obviously a leading question. In fear of counteracting the social norm, a respondent may have a tendency of giving a negative response even though he / she is a habitual smoker. The reliability of data obtained from such a question is dubious.

Last but not least, the response rate achieved in a survey is also an important indicator that helps assess the quality of survey results. Response rate is the percentage of selected respondents who are successfully interviewed. Low response rate will introduce non-response bias to the data because the characteristics of the non-respondents may often be quite different from those of respondents. Therefore, the results of surveys with a low response rate are likely to be biased and misleading.

5   Survey methods

References

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Hong Kong Statistical Society, *A Practical Guide to Sample Surveys*, 1992.

United Nations Statistics Division, *Principles and Recommendations for Population and Housing Censuses*, Revision 3, 2017.

Interactive quiz

You may test the knowledge you have learnt in this Chapter by trying this interactive quiz.   Answers to the questions can be found in the relevant paragraphs of this Chapter.

5 Survey methods

Exercise

Conducting surveys

Readers can design and conduct a survey by drawing reference to the following illustrative example regarding the major procedures in conducting a school survey.

(1) Listing and sampling

There are several possible methods :

(i) A list of all students in the school is prepared and all students are to be surveyed. This is a "census".

(ii) The above list is prepared. By drawing lots, a pre-set number of students is selected. (A more advanced treatment is to use "random" numbers but lot-drawing can achieve the same purpose.) This is called a "simple random sampling method".

(iii) Another convenient yet scientific method is to prepare a list of all classes, then randomly select a pre-set number of classes by lot-drawing, and survey all students in the selected classes. This is called a "cluster sampling method".

Methods (ii) and (iii) above involve "random" selection, which should be distinguished from arbitrary choice of students or classes. The students selected from these methods would form a representative sample for the whole school.

(2) Questionnaire design

The type of information to be collected has to be decided first. Subsequently questions are designed to collect the required information. The information usually includes basic data about the students, such as their age, sex and class. The primary questions may focus on some of their characteristics or about their opinions on certain aspects. A specimen questionnaire is provided herewith for collecting information on students' habit of surfing the Internet. More items may be added if necessary.

(3)　Data collection and editing

To collect the information, interviewers may interview respondents (i.e. the selected students) or distribute the questionnaires for self-completion by the respondents themselves.　If the interviewing method is used, the interviewers should be trained to conduct interviews properly, ensuring that the questions are understood by respondents and complete answers are supplied.　If self-completion method is used, questionnaires normally have to be simple and fully self-explanatory.　The completed questionnaires are then edited subsequently. If there are errors, they have to be rectified.

(4)　Data processing and analysis

Data in the questionnaires are then processed, with the aid of the computer if necessary.　Statistical tables are produced.　Graphs may also be prepared for further discussion and analysis.　Some simple statistical indicators may also be calculated from the data collected.

Below are some other hints in organising the school survey :

(i)　When setting the questionnaire, try to limit the number of questions to no more than some 15 questions.　Keep the questions concise yet precise.　Avoid using open-ended questions in a relatively simple survey.

(ii)　Before carrying out the actual school survey, try to test the questionnaire with some potential respondents to see whether it is clear and easy to understand, and whether the respondents are able to provide the information.

(iii)　It is necessary to make sure that every selected student has completed one and only one questionnaire.　Omissions and duplications should be rectified.

(iv)　It is necessary to instill in the interviewers a sense of respect for private information.　They should be aware of the need to avoid revealing to any unauthorised person the information with regard to individual persons obtained in the interviews.　(A small ceremony may be held for interviewers to take an oath on this obligation.　This may also boost respondents' confidence in giving true information).

(v)　To process the data, workers can work in groups for data coding, editing, counting, computing, etc.　Editing is a process to correct inconsistencies and to eliminate omissions found in answers in the completed questionnaires.

(vi)   There are many ways to present the findings.   For example, obtain simple frequency count of each variable and present the frequency distributions in the form of bar graphs, line graphs or pie charts.

(vii)   To find out relationship among different variables, it may be interesting to cross-tabulate some of them as follows :

> ➢   number of students by type of housing by monthly household income;

> ➢   number of students by type of housing by type of equipment used to surf the Internet;

> ➢   number of students by type of housing by number of hours spent on surfing the Internet; and

> ➢   number of students by age by major purpose for surfing the Internet.

Points to note

The "population" in the school survey (whether a census of the students or a sample survey of them) comprises all students of the school in question.   The findings are applicable to students of the school (if the survey is conducted properly).   One should be careful not to generalise the findings to, say, students of the district where the school is situated or even to all students of Hong Kong.   If we do wish to find out facts about all students of Hong Kong, the design of the survey will have to be more complex and the scale of the operation will be much bigger.

Survey questionnaire

Serial No.：_____

Please put a "✓" in the appropriate answers.

(1) Age：_____ (in complete years)

(2) Sex： 1 ☐ Male 2 ☐ Female

(3) Number of household members (including yourself)：_____

(4) Type of housing
   1 ☐ Public rental housing
   2 ☐ Subsidised home ownership housing
   3 ☐ Private housing

(5) Monthly household income
   1 ☐ Less than $10,000
   2 ☐ $10,000 - $19,999
   3 ☐ $20,000 - $29,999
   4 ☐ $30,000 - $39,999
   5 ☐ $40,000 - $49,999
   6 ☐ $50,000 or more

(6) What is your major purpose(s) for surfing the Internet?
   (You may choose more than one option.)
   1 ☐ Communication with others (e.g. sending/receiving messages/e-mails)
   2 ☐ Online entertainment (e.g. playing Internet games, watching videos/movies)
   3 ☐ Online shopping
   4 ☐ Surfing social media
   5 ☐ Searching for information
   6 ☐ Others (please specify: _____)

(7) How much time did you totally spend in surfing the Internet last week?
   1 ☐ Less than 10 hours
   2 ☐ 10 to less than 20 hours
   3 ☐ 20 to less than 30 hours
   4 ☐ 30 to less than 40 hours
   5 ☐ 40 hours or more

(8) How often did you use the Internet to search for information for your study last week?

    1 ☐ Less than 5 times

    2 ☐ 5 to less than 10 times

    3 ☐ 10 to less than 15 times

    4 ☐ 15 times or more

(9) What kind(s) of equipment do you usually use to surf the Internet?

   (You may choose more than one option.)

    1 ☐ Smartphone

    2 ☐ Notepad / tablet

    3 ☐ Notebook / desktop computer

    4 ☐ Others (please specify: _____)

(10) Which of the following web browsers do you prefer to use for surfing the Internet?

   (You may choose more than one option.)

    1 ☐ Internet Explorer / Microsoft Edge

    2 ☐ Google Chrome

    3 ☐ Firefox

    4 ☐ Safari

    5 ☐ Others (please specify: _____)

6 Uses and misuses of statistics

Introduction

"Statistics" has two meanings: first, as information in quantitative form relating to an aggregate group, i.e. the numbers themselves; second, as the subject in science dealing with such information, i.e. the principles and methods which have been developed for handling data.   Information pertaining to an individual element – be it a person, firm or other subject of interest – is, on its own, normally not referred to as "statistics".   In the context of statistical work, such information is called raw data, which become statistics only after going through some compilation or processing steps such as summation or calculation of average.   Hence, the two aspects of statistics, as information and methodology, have interlocking relationships.

Statistics, as a subject in science, plays an increasingly important role on various fronts. It is widely used in business, education, science, engineering, and economic and social research.   It also serves as a useful tool to facilitate better understanding of the society and discussion of socio-economic issues in a scientific manner.

Although statistics are useful, it is important to use them properly.   Statistical data have to be of reasonably good quality before they are put into use and this relies on proper methods of data collection and compilation.   When interpreting and analysing statistics, appropriate techniques should be applied, or else wrong conclusions may be arrived at.

Uses of statistics

(1)   Description of situations

People are often looking for relevant information in a form which can help them understand the situations at work or in their daily lives.   For example, a headmaster observes that students of the S1 class seem to be taller than the students of the S1 class five years ago (this is a piece of qualitative information as it represents the perception of a phenomenon).

To ascertain this, information on the height of each student in the S1 class and similar information of students in the S1 class five years ago are studied. However, there are hundreds of students and going over the records alone may only give an impression of the students' height in general, leading to merely a broad confirmation of the headmaster's impression.

The most common way to tackle this kind of situation is to calculate the "mean" height for each of the two groups.   The summarisation of individual students' data to an aggregate form, i.e. "statistics", is a more precise, quantitative description of the situation.

(2)   Comparison

Comparison is to assess whether two or more groups of items have different properties, e.g. comparison between districts, countries, or different points of time.

In the above example of students' height, the headmaster can compare the average height of each of the two groups of students and then identify which group of students are on the whole actually taller, and by how much.

(3)   Detection of relationship

Examples include detection of relationship between smoking and having lung cancer, and the relationship between income and expenditure.

(4)   Evaluation

An example is the evaluation of the effectiveness of certain action programmes, such as the "Water Conservation Campaign".

(5)   Prediction

An example is the prediction about the future based on existing trends and knowledge of relevant developments, such as sales forecast and population projections.

(6)   Support for policy formulation

An example is to make reference to data on current and future road traffic obtained in a study to decide whether a highway should be constructed.

(7)   Operational and process control

An example is to use statistics for application in the quality control process of manufactured goods.

Social statistics

Social statistics are concerned with such subjects as the social environment, demographic characteristics of people, their activities and their opinions and attitudes.

Some important social statistics are :

(1) Demographic characteristics   ‐   population size
                                            ‐   population composition
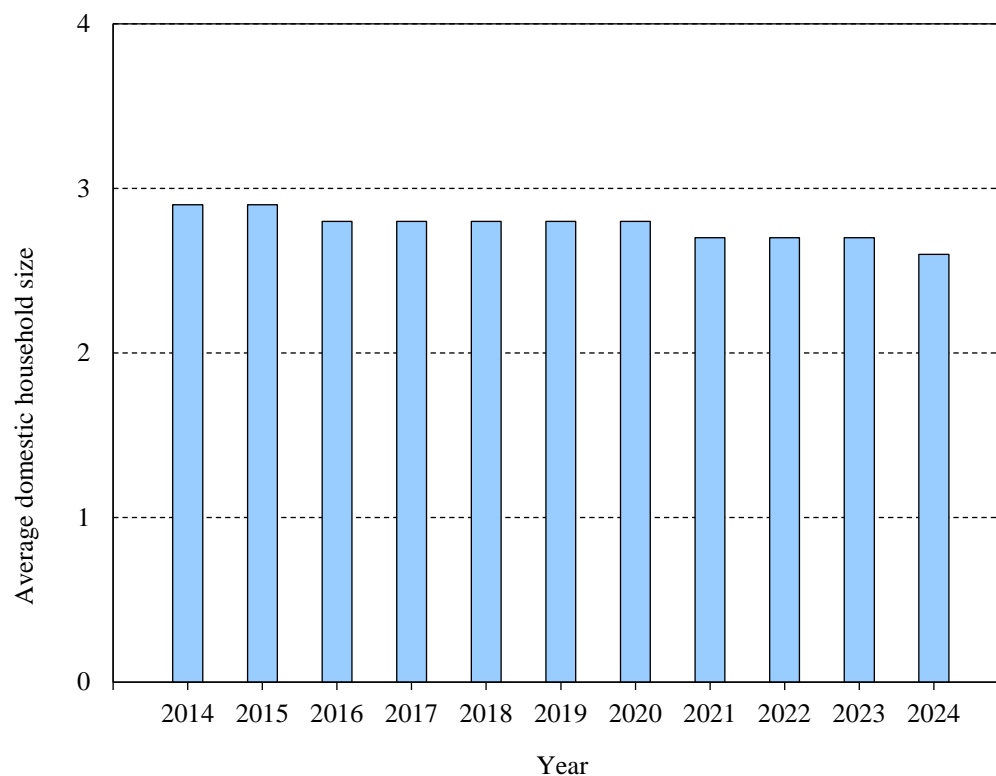   ‐   births
                                            ‐   deaths
                                            ‐   net movements
                                            ‐   marriages

Chart 6.1   Population of Hong Kong by age and sex, mid-2024
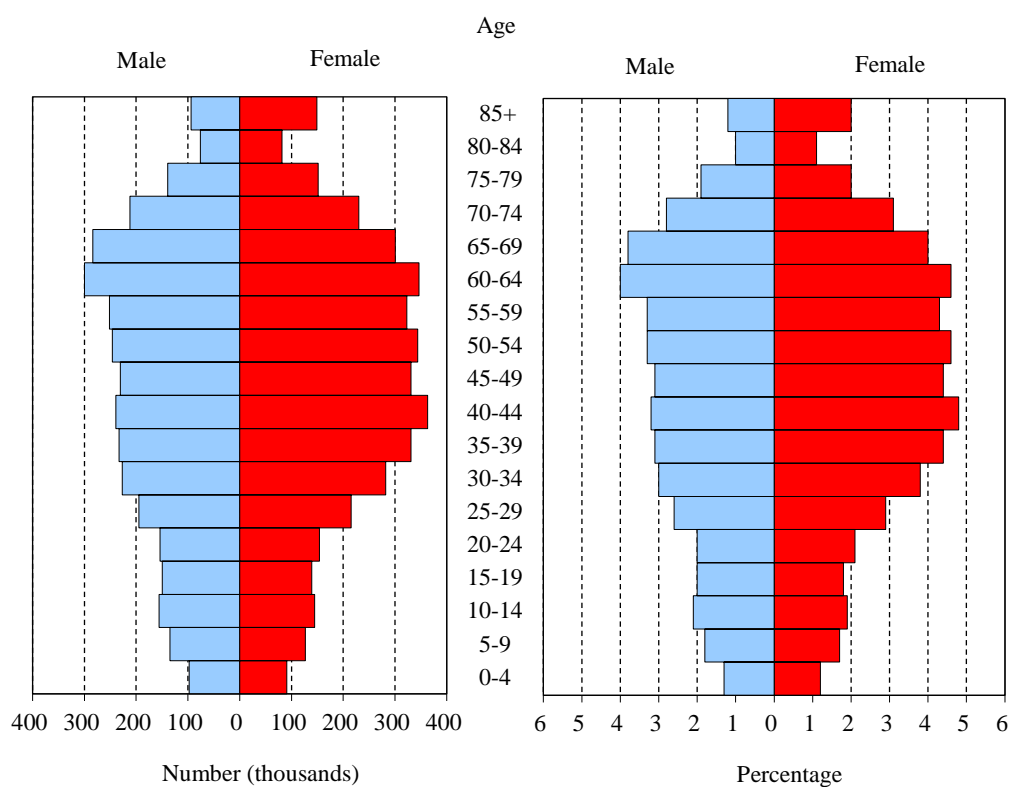
6 Uses and misuses of statistics

(2) Domestic households(1)   - household size
                              - household composition
                              - household income

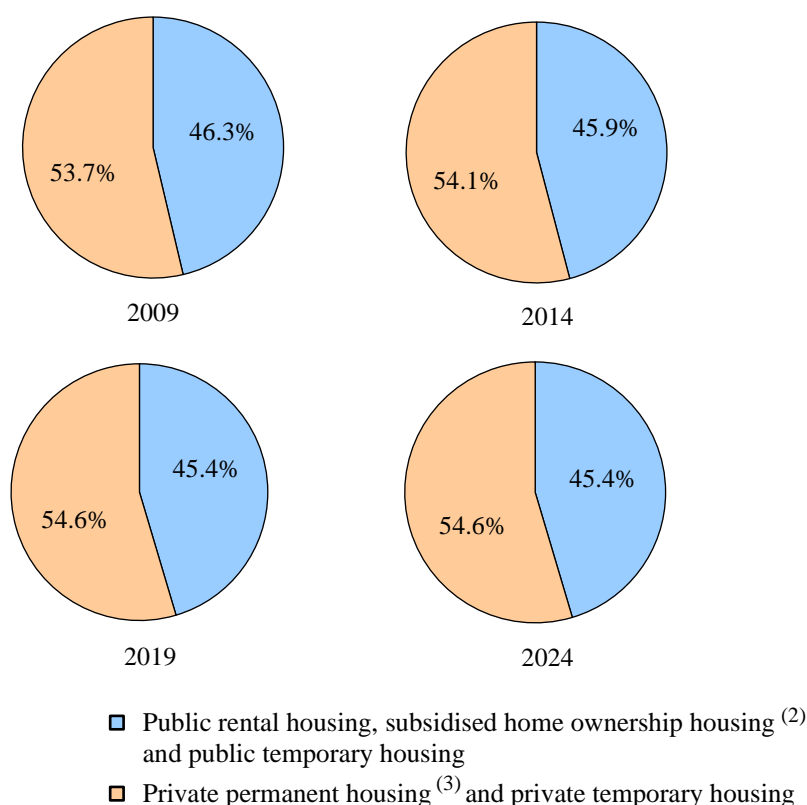**Chart 6.2   Average domestic household size, 2014 – 2024**

Note :
(1) Domestic household consists of a group of persons who live together and make common provision for essentials for living. These persons need not be related. If a person makes provision for essentials for living without sharing with other persons, he / she is also regarded as a household. In this case, the household is a one-person household.   A domestic household must have at least one member who is a "Usual Resident".   Households comprising "Mobile Residents" only are not classified as domestic households.

(3) Housing   ‐   stock of permanent quarters
                                 ‐   housing facilities
                                 ‐   housing type
                                 ‐   degree of sharing
                                 ‐   tenure of accommodation
                                 ‐   rent

**Chart 6.3**   **Percentage distribution of domestic households by type of housing, 2009 – 2024**

Public rental housing, subsidised home ownership housing [2] and public temporary housing

Private permanent housing [3] and private temporary housing

Notes :

(2)   Subsidised home ownership housing includes flats built under the Home Ownership Scheme, Middle Income Housing Scheme, Private Sector Participation Scheme, Green Form Subsidised Home Ownership Scheme, Buy or Rent Option Scheme and Mortgage Subsidy Scheme, and flats sold under the Tenants Purchase Scheme of the Hong Kong Housing Authority.   It also includes flats built under the Flat-For-Sale Scheme, Sandwich Class Housing Scheme and Subsidised Sale Flats Projects of the Hong Kong Housing Society, and flats in Urban Renewal Authority Subsidised Sale Flats Scheme.   As from the first quarter of 2002, subsidised sale flats that can be traded in open market are excluded.

(3)   Private permanent housing includes private housing blocks, flats built under the Urban Improvement Scheme of the Hong Kong Housing Society, villas / bungalows / modern village houses, simple stone structures / traditional village houses and quarters in non-residential buildings.   As from the first quarter of 2002, subsidised sale flats that can be traded in open market are also put under this category.

(4)   Education ‐   educational attainment of population
                        ‐   schools
                        ‐   teachers
                        ‐   student enrolment

**Chart 6.4**   **Student enrolment[4] by level of education, 2014 – 2024**
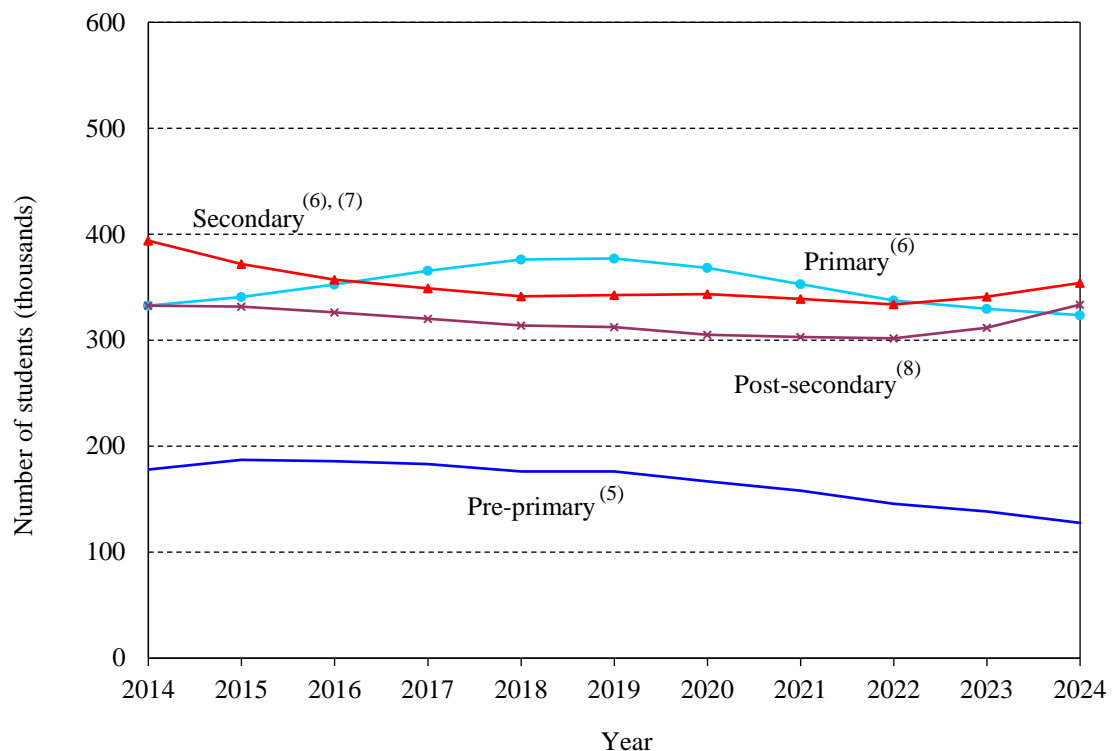
Notes：

(4)   Figures include both full-time and part-time students attending long programmes lasting for at least one school / academic year.   Figures do not include students attending tutorial, vocational and adult education courses offered by schools below post-secondary education level.   Figures for secondary and post-secondary education for 2024 are provisional.

(5)   Figures include nursery, lower and upper classes in kindergartens and kindergarten-cum-child care centres registered under the Education Bureau, and special child care centres registered under the Social Welfare Department.

(6)   Figures include special schools.

(7)   Figures include evening schools, craft level courses and Diploma Yi Jin programme / Diploma of Applied Education.

(8)   Figures include universities and colleges offering post-secondary courses including certificate / diploma, associate degree or equivalent and bachelor degree or above; and also non-local registered or exempted courses leading to non-local higher academic qualifications and operated jointly with non-local institutions.

(5)   Employment   -   labour supply
                         -    unemployment and underemployment
                         -    distribution of employed persons by industry
                         -    distribution of employed persons by occupation
                         -    hours worked
                         -    earnings from employment

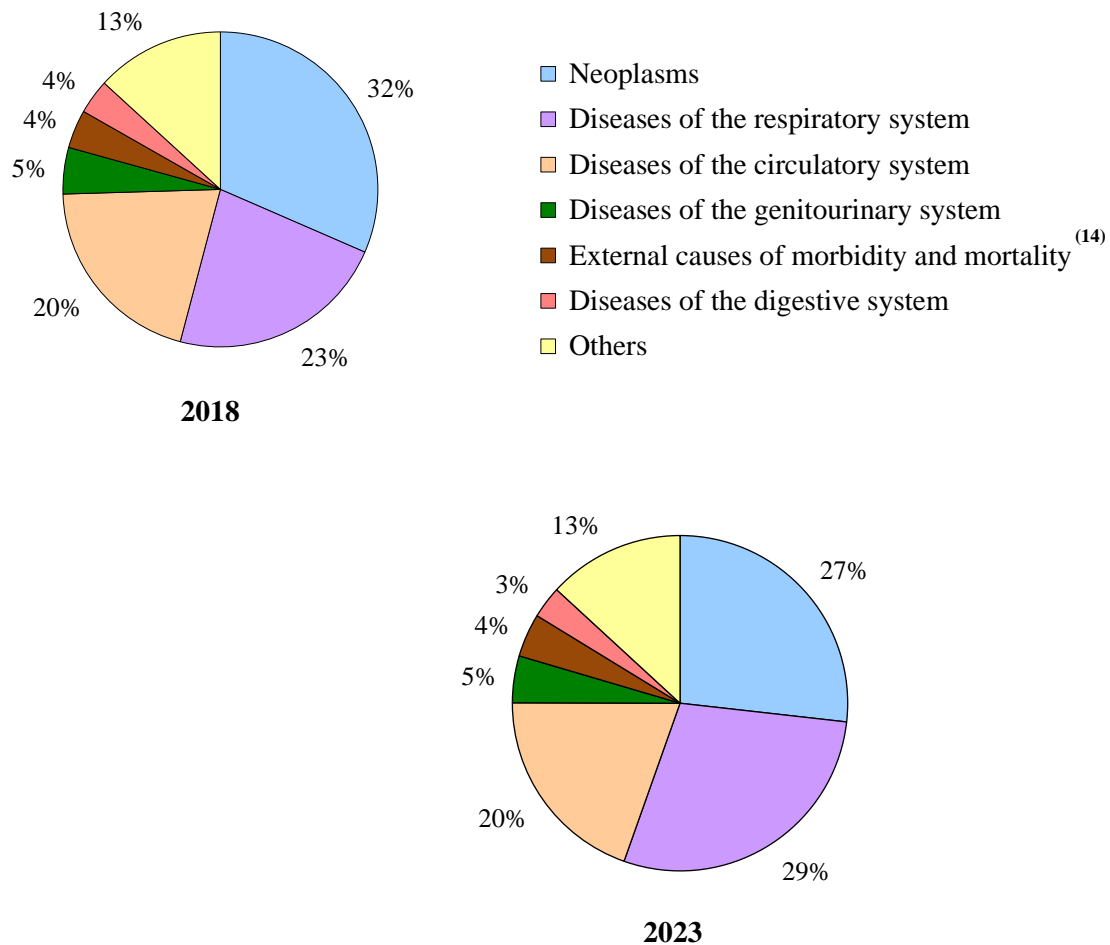**Chart 6.5   Distribution of employed population by industry[9], 2014 – 2024**
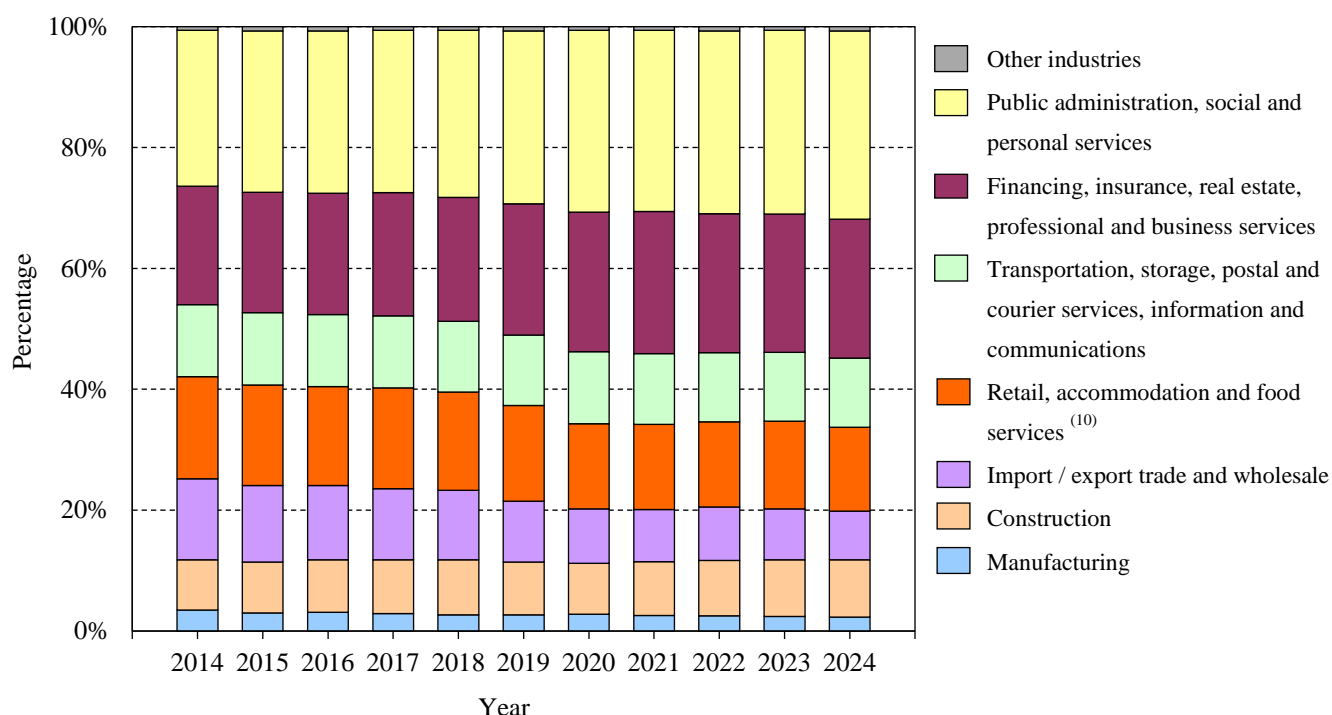
Notes :

(9)   Figures are compiled based on Hong Kong Standard Industrial Classification Version 2.0.

(10)   The retail, accommodation and food services industries as a whole is generally referred to as the consumption- and tourism-related segment.

(6)   Medical and health   -   healthcare facilities and services
                             -    health manpower
                             -    patients
                             -    diseases
                             -    causes of death

Chart 6.6   Registered deaths by cause, 2018 and 2023[11], [12], [13]

□ Neoplasms
□ Diseases of the respiratory system
□ Diseases of the circulatory system
□ Diseases of the genitourinary system
■ External causes of morbidity and mortality[14]
■ Diseases of the digestive system
□ Others

2018

2023

Notes :

(11) The figures are based on deaths registered under the Births and Deaths Registration Ordinance (Cap. 174, Laws of Hong Kong) during the specified period.

(12) Classification of diseases and causes of death is based on the International Statistical Classification Diseases of and Related Health Problems (ICD) 10th Revision.

(13) Individual percentages may not add up to 100 due to rounding.

(14) According to the ICD 10th Revision, when the morbid condition is classifiable under Chapter XIX as "Injury, poisoning and certain other consequences of external causes", the codes under Chapter XX for "External causes of morbidity and mortality" should be used as the primary cause of death.

(7)   Social welfare   -   beneficiaries and benefits
                              -     services for the elderly
                              -     family and child welfare services
                              -     services for young people
                              -     rehabilitation and medical social services
                              -     institutional services

(8)   Law and order   -   crimes
                              -     victims
                              -     judicial services
                              -     prisoners / inmates and correctional services

(9)   Culture, entertainment and recreation
                              -     cultural, entertainment and sports presentations
                              -     recreational facilities

Economic statistics

Economic statistics are statistics related to the structure and performance of an economy and the operating characteristics of different industries.   Some statistics can be treated as either economic or social statistics under different analytical frameworks, such as wages and employment.

Some important economic statistics are :

(1)   National Income and Balance of Payments statistics
-        -   Private consumption expenditure
-        -   Gross Domestic Product
-        -   Investment income
-        -   Gross National Income
-        -   Balance of Payments account
-        -   International Investment Position
-        -   External Debt

Chart 6.7   **Gross Domestic Product of Hong Kong (at current market prices), 2014 – 2024**
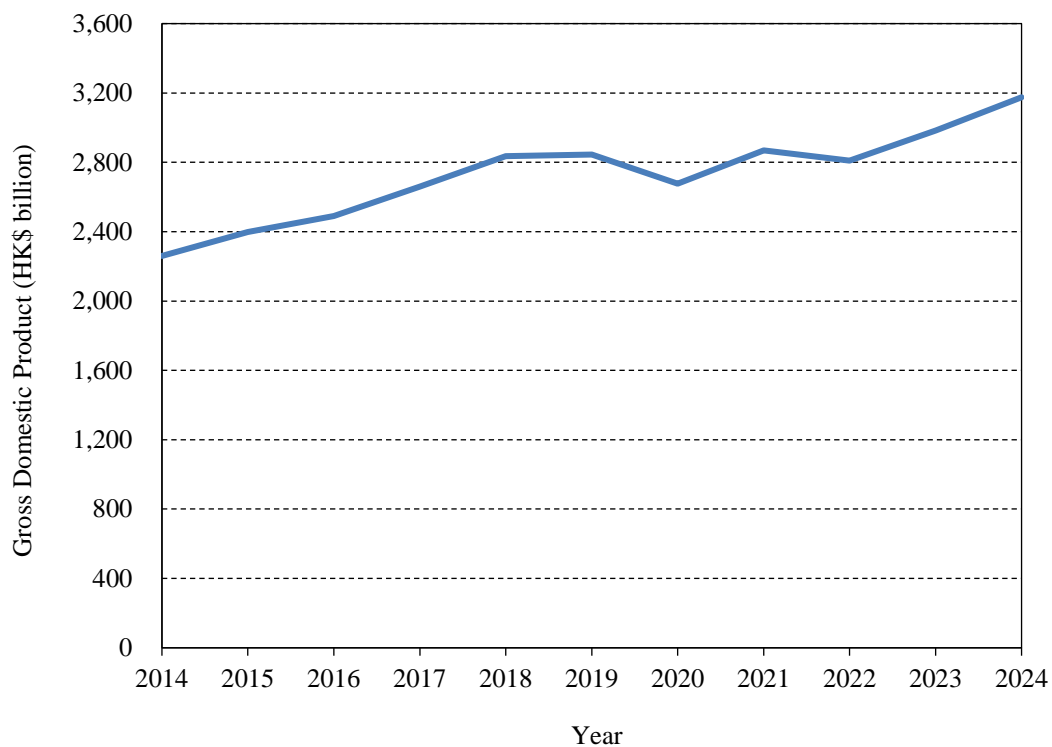
6 Uses and misuses of statistics

(2) External trade - imports and exports of goods
- trade involving outward processing in the Mainland
- trade in services
- offshore trade in goods

Chart 6.8   Values of total exports[15] and imports[16] of goods, 2014 – 2024
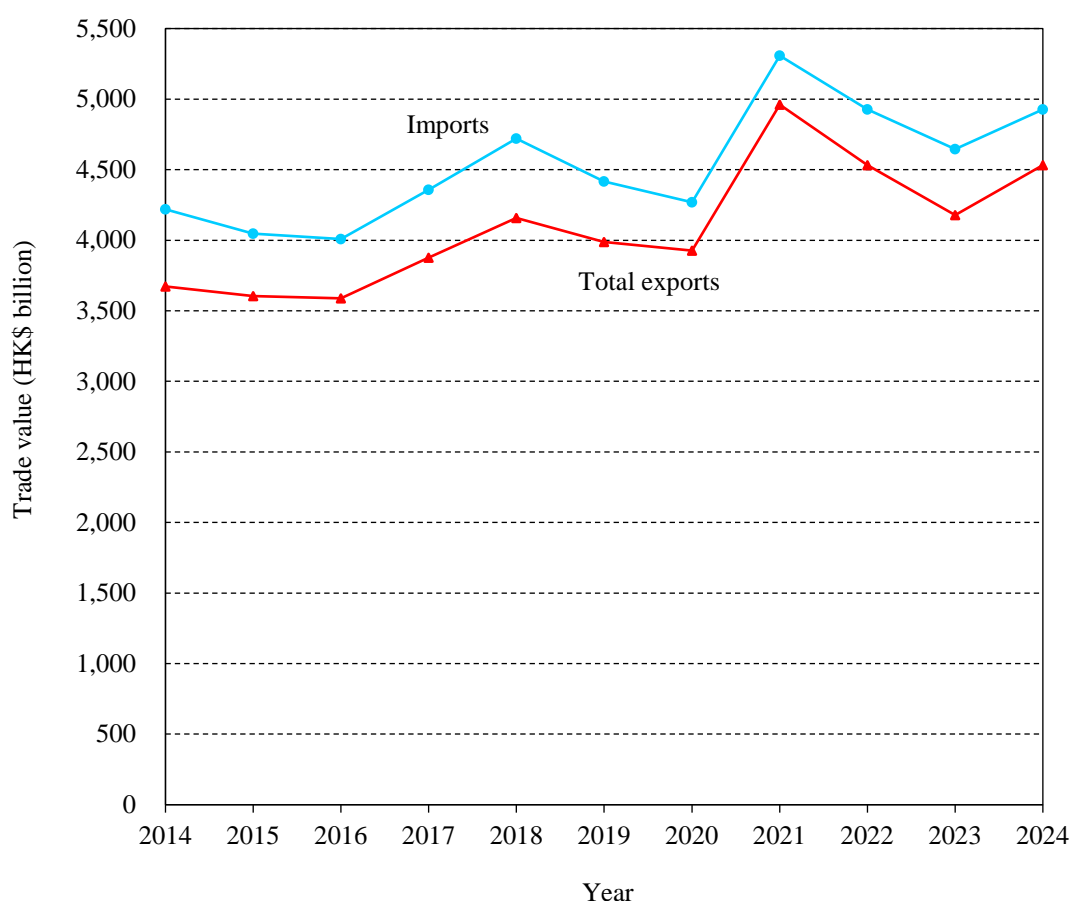
Notes :

(15) "Total exports" comprise domestic exports and re-exports.   Domestic exports are the natural produce of Hong Kong or the products of a manufacturing process in Hong Kong which has changed permanently and substantially the shape, nature, form or utility of the basic materials used in manufacture.   Re-exports are products which have previously been imported into Hong Kong and which are re-exported without having undergone in Hong Kong a manufacturing process which has changed permanently and substantially the shape, nature, form or utility of the basic materials used in the manufacture.

(16) "Imports" are goods which have been produced or manufactured in places outside the jurisdiction of Hong Kong and brought into Hong Kong for local use or for subsequent re-export, as well as Hong Kong products re-imported.

(3)   Labour   -   number of persons engaged by industry

                                       -   wages and earnings

(4)   Prices   -   Consumer Price Indices (CPIs)

                                         -   import and export prices

                                         -   wholesale and retail prices

**Chart 6.9   Year-on-year rates of change in the Consumer Price Indices[17], [18], 2014 – 2024**
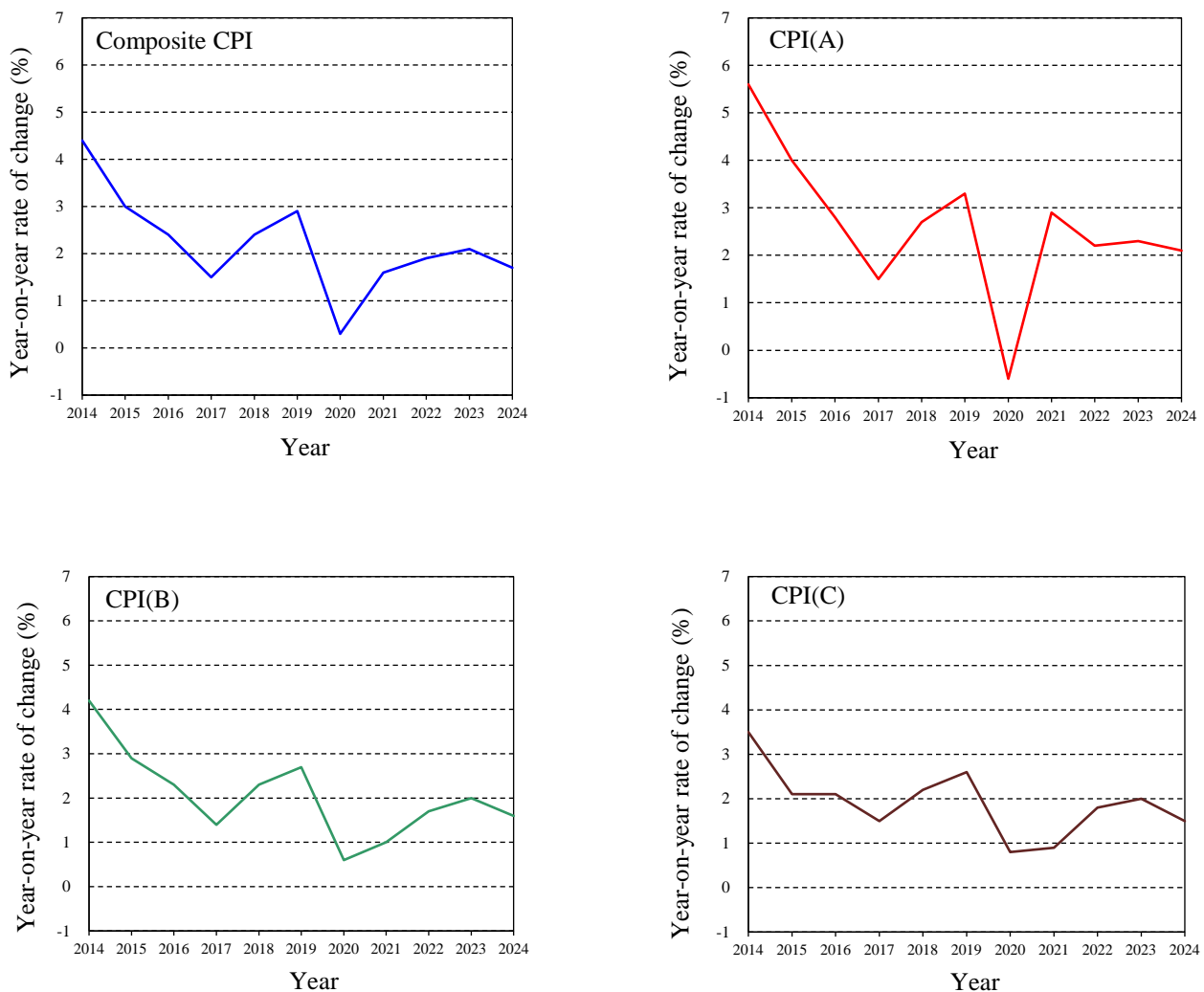
Notes :

(17)   CPIs measure the changes over time in the price level of consumer commodities and services generally purchased by households.   Please see the section on price statistics on pages 87 – 89 for details.

(18)   From October 2020 onwards, the year-on-year rates of change are derived from the 2019/20-based CPIs.   The year-on-year rates of change before October 2020 were derived using the index series in the base periods at that time (e.g. the 2014/15-based index series for rates of change for October 2015 to September 2020), compared with the index a year earlier in the same base period.

(5)   Operating characteristics and business performance of different economic sectors
- manufacturing, energy supply and waste management
- construction, real estate and related services
- retail
- food and accommodation services
- import / export and wholesale trades
- transportation, storage and courier services
- information and communications
- financing, insurance, professional and business services

(6)   Tourism   -   visitor arrivals and their spending in Hong Kong

Chart 6.10   Visitor arrivals by nationality / country/territory of residence [19], 2014 –2024
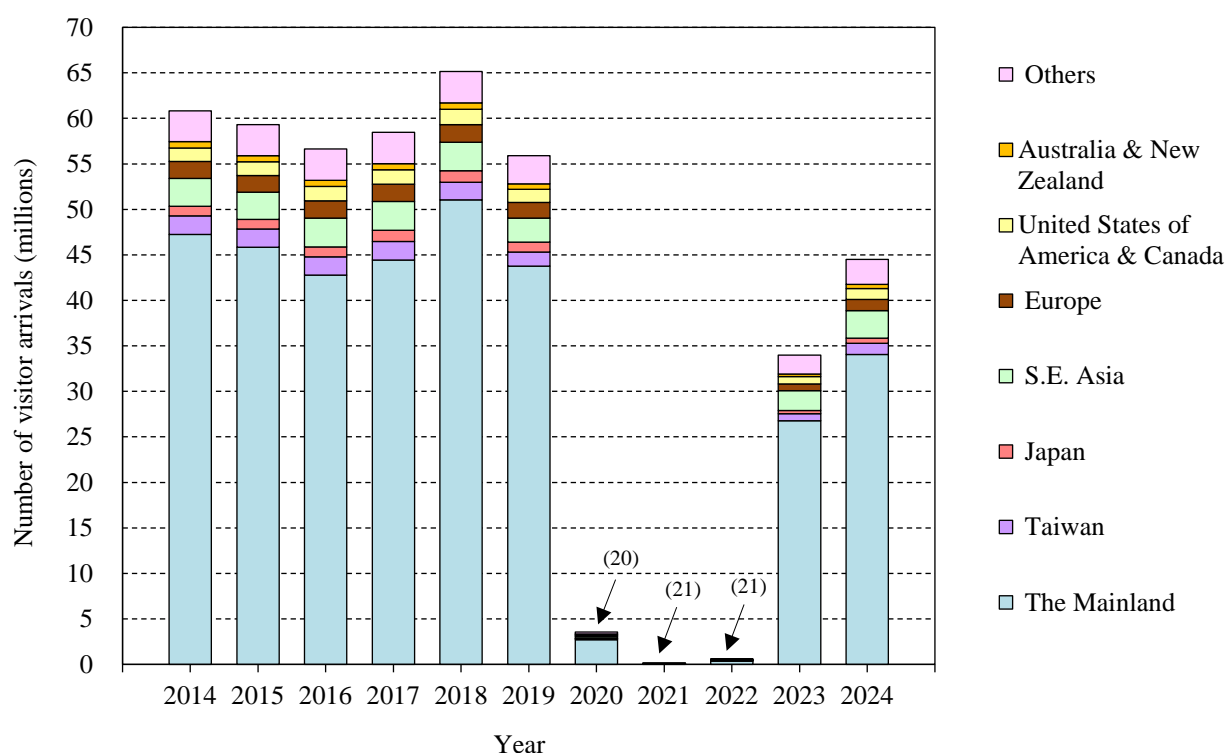
(7)   Finance   -   deposits and loans
- foreign exchange
- stock exchange turnover and index of share prices
- public accounts
- asset management

Notes :

(19) Before October 2024, visitor arrivals obtained from the Hong Kong Tourism Board are classified by country/territory of residence.   Starting from October 2024, they are classified by nationality. Figures under different classifications are not directly comparable.

(20) Including Taiwan, Japan, S.E. Asia, Europe, United States of America & Canada, Australia & New Zealand, and Others.

(21) Including all countries / territories.

6 Uses and misuses of statistics

Misuses of statistics

Nowadays, the society has become increasingly more scientific-minded. Arguments without the support of relevant figures can hardly convince people. This shows how important statistics are. However, if the data are not properly used, one will make a blunder in trying to be smart. Not only will the arguments be refuted and queried, decision-makers may also be misled to make the wrong decisions, which may cause serious consequences.

To fully understand the proper ways of using statistics, one has to acquire the knowledge through in-depth learning and accumulation of experience. The following are some common mistakes that should be avoided.

Unknown reference periods of statistics

When making statements about comparisons of statistics over time, it is important to specify the reference periods in question. A statement like "the number of students has grown 30%" is not meaningful. It is necessary to specify that the growth has taken place over a certain interval of time, be it 1 year, 5 years or 10 years, etc.

When describing the changes of a series of statistics over time, it is important to specify the base period of comparison.

Example:

What is wrong with the following statements?

1. "CPI in July was 2.8% higher."
2. "GDP last quarter declined by 0.5%."

The base period of comparison should be stated clearly:

1. "The **year-on-year rate of change** in CPI in July was 2.8%." or "CPI in July this year was 2.8% higher than that in July **last year**."
2. "The **year-on-year growth rate** of GDP in the last quarter was 3.5%, which was lower by half a percentage point when compared with the 4.0% year-on-year growth rate in the quarter earlier."

6 Uses and misuses of statistics

Improper use of base of comparison

A restaurant claims in its advertisement that its prices will be cut by 100%.   It is, of course, clear that prices cannot be cut by 100%, lest the servings would now be given away free of charge!   In fact, what the restaurant does is that food formerly sold at $60 per order will be sold at $30 after the price deduction.   The restaurant has calculated the 100% from ($60 – $30) / $30 × 100% by using the reduced price as the base of comparison.   This is incorrect.   The proper way of calculation is to use the original price as the base.   Hence the reduction is only 50%, i.e. ($60 – $30) / $60 × 100%.

Improper averaging of percentages and ratios

When individual percentages and ratios are calculated on different bases, they should not be added together directly to get the overall average.

Example :

Population figures[22] from 2021 Population Census

Area	Male	Female	Sex ratio (No. of males per 1 000 females)
Hong Kong Island	515 138	680 391	757
Kowloon	1 016 103	1 216 236	835
New Territories	1 850 389	2 133 688	867
Overall	3 381 630	4 030 315	839

It is incorrect to derive the overall sex ratio for Hong Kong by adding the individual ratios for different areas and then dividing by 3.   This would give a wrong value of 820 [i.e. (757 + 835 + 867) / 3].   The true value of 839 should be calculated from the total number of males and females [i.e. (3 381 630 / 4 030 315) × 1 000] instead.

Note :
(22)   Excluding the marine population.

6 Uses and misuses of statistics

Misinterpretation of changes

Example (1)

John's monthly salary is $12,000.   When we say that his monthly salary is going to be ***increased by*** two times next month, what will be his new salary?

The answer is $36,000, i.e. ($12,000 + $12,000 × 2).   However, if his salary is going to be ***increased to*** two times instead, then the revised salary will be $24,000 = $12,000 × 2.

Example (2)

The sales volume of a company dropped from $1,000,000 in 2023 to $500,000 in 2024. Can we say "The sales volume dropped <u>by two times</u>"?

The answer is no.   Sales volume cannot drop by two times (200%).   It already becomes zero if it drops by one time (100%)!   The correct description should be "The sales volume dropped by half or dropped by 50%
[i.e. ($1,000,000 – $500,000) / $1,000,000 × 100% = 50%]".

Example (3)

One of the two members of a household was sick.   Though it is not wrong to say "50% of the members were sick", a statement like this is not meaningful when the base figure is too small.

Take a look at another example. The customer services department of a company could not reply to a complaint according to the scheduled time.   It is not meaningful to say that the customer service of the company was bad based solely on the single incident mentioned above, especially if the total number of complaints received by the company in that particular year was only one.

Mis-presentation of data

The same set of statistical data may be presented in different ways to convey quite different impressions to readers.   Hence, illusions would easily occur and readers would then be misled if data are not presented properly.   Some common examples of mis-presentation of data are discussed below.

6 Uses and misuses of statistics

Illusion in interpreting absolute magnitude of figures

Simply comparing the absolute magnitude of figures but ignoring other relevant factors may create illusion.

Example:

What is wrong with the following analysis?

"According to Table 1, City A had the least number of hospital beds among the three cities."

Table 1

City	No. of hospital beds
City A	34 000
City B	45 000
City C	83 000

By simply comparing the number of hospital beds as shown in the table, one may think that the provision of hospital beds is most inadequate in City A among the three. However, to avoid illusion created by the numbers, we should use the "rate" (i.e. the ratio of number of beds to population) to compare the availability of hospital beds in different cities (see Table 2).

Table 2

City	No. of hospital beds per 1 000 population
City A	5.0
City B	1.8
City C	1.0

Illusion in interpreting small-based figures

Special care should be taken when interpreting figures in comparison of small base to avoid arriving at the wrong conclusion.

Example:

Which government department best fulfills the requests of information enquirers?

Top five government departments that fulfill the requests of information enquirers		
Rank	Department	Percentage of cases that the enquirers' requests were fully entertained
(1)	Department A	100%
(2)	Department B	55.0%
(3)	Department C	52.5%
(4)	Department D	45.8%
(5)	Department E	42.4%

How would you conclude if more information is given?

Top five government departments that fulfill the requests of information enquirers				
Rank	Department	Total no. of cases	No. of cases that the enquirers' requests were fully entertained	Percentage of cases that the enquirers' requests were fully entertained
(1)	Department A	1	1	100%
(2)	Department B	20	11	55.0%
(3)	Department C	40	21	52.5%
(4)	Department D	48	22	45.8%
(5)	Department E	33	14	42.4%

Charts using an improper vertical scale

It is essential that charts with an arithmetic scale should begin at the zero base line in order to show the true picture.   However, when the data to be presented graphically are of very large values but with small variations, some people would tend to adopt a larger scale and plot the chart from a larger initial point for easy observation and comparison purposes.   Watch out for this, as the true relationship between the data for different time points is bound to be exaggerated and a distorted impression will be conveyed.   Differences between the data would appear greater, and the slopes indicating the trends seem to be steeper (Chart 6.11(A)).

In order to convey a true picture of the relationship while still highlighting the variations, a broken scale chart is often used (Chart 6.11(B)).   It enables the data variations to be observed easily but still reminds readers to watch out for the possible distorted impression that may be conveyed by the chart.

Chart 6.11

(A) Charts not using the broken scale

Sales turnover of Company ABC, 2021 – 2024
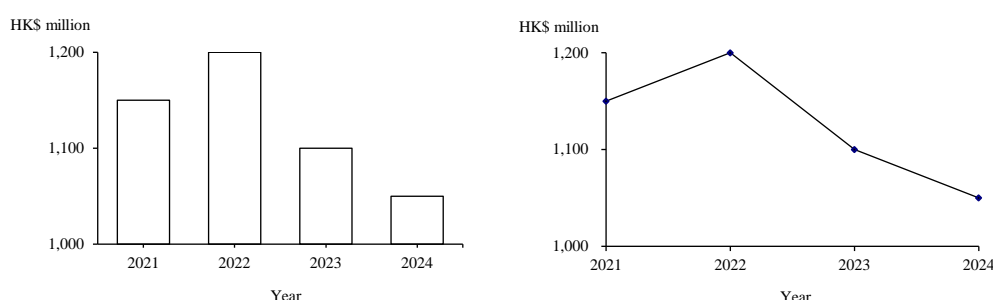
(B) Charts using the broken scale

Sales turnover of Company ABC, 2021 – 2024
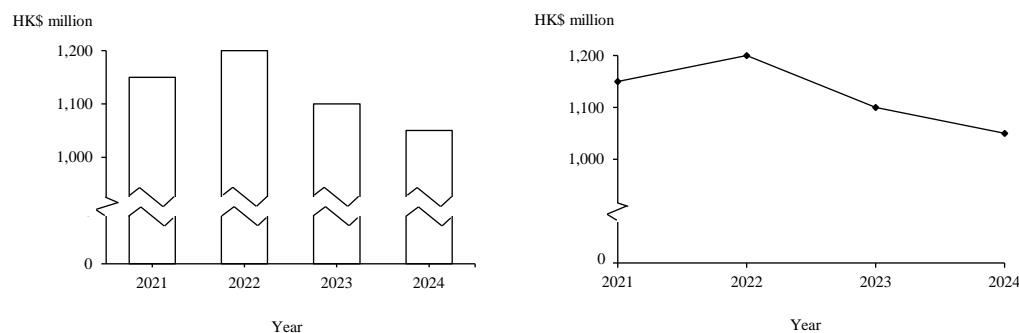
6 Uses and misuses of statistics

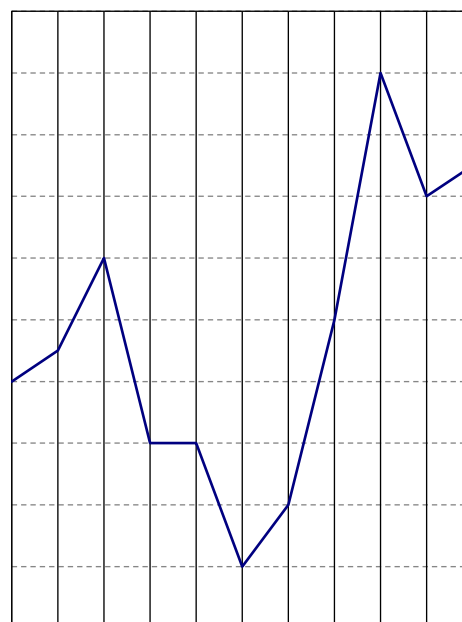*Illusions caused by expanding / contracting the grid*

Seemingly, expanding the vertical axis or contracting the horizontal axis of a chart may exaggerate the changes in the trends as depicted in the chart. On the other hand, changes in the trends will appear to be less vigorous than the actual situation if the horizontal axis is expanded or the vertical scale is contracted to a large extent.

Chart 6.12   **Changing the visual image : Contracting or expanding vertical (amount) scale or horizontal (time) scale tends to change the visual picture**

(i) Original scale arrangement
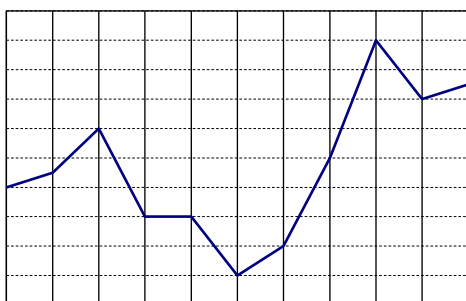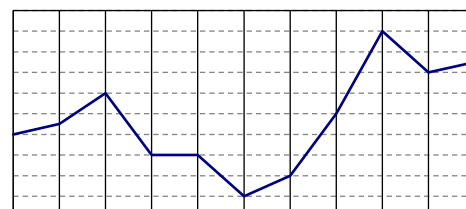
(ii) Expanding vertical scale

(iii) Contracting horizontal scale
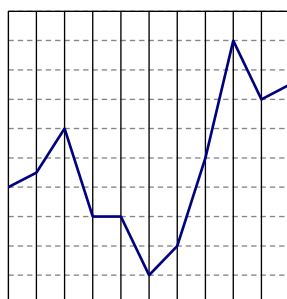
(iv) Expanding horizontal scale
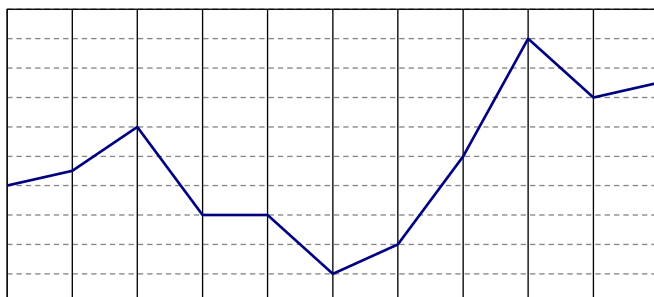
(v) Contracting vertical scale

6 Uses and misuses of statistics

Illusions caused by skipping the grid

A familiar layout in reports and advertisements is seen in Chart 6.13(A). In order to dramatise the story, a little trick is done with the horizontal (time) scale, so that the period represented by each grid is different. It is not noticeable at a casual glance. Chart 6.13(B) shows what the actual trend looks like when the correct grid spacing is used for the respective years.

Chart 6.13

(A)

HK$ million

Year

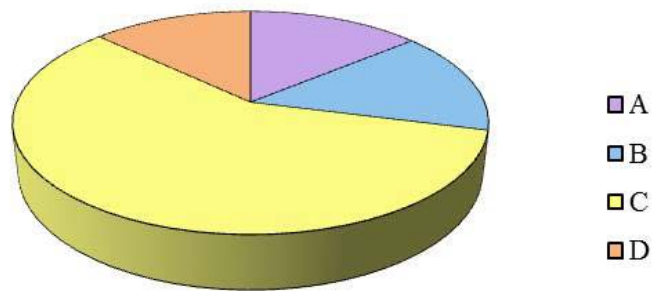(B)

HK$ million

Year
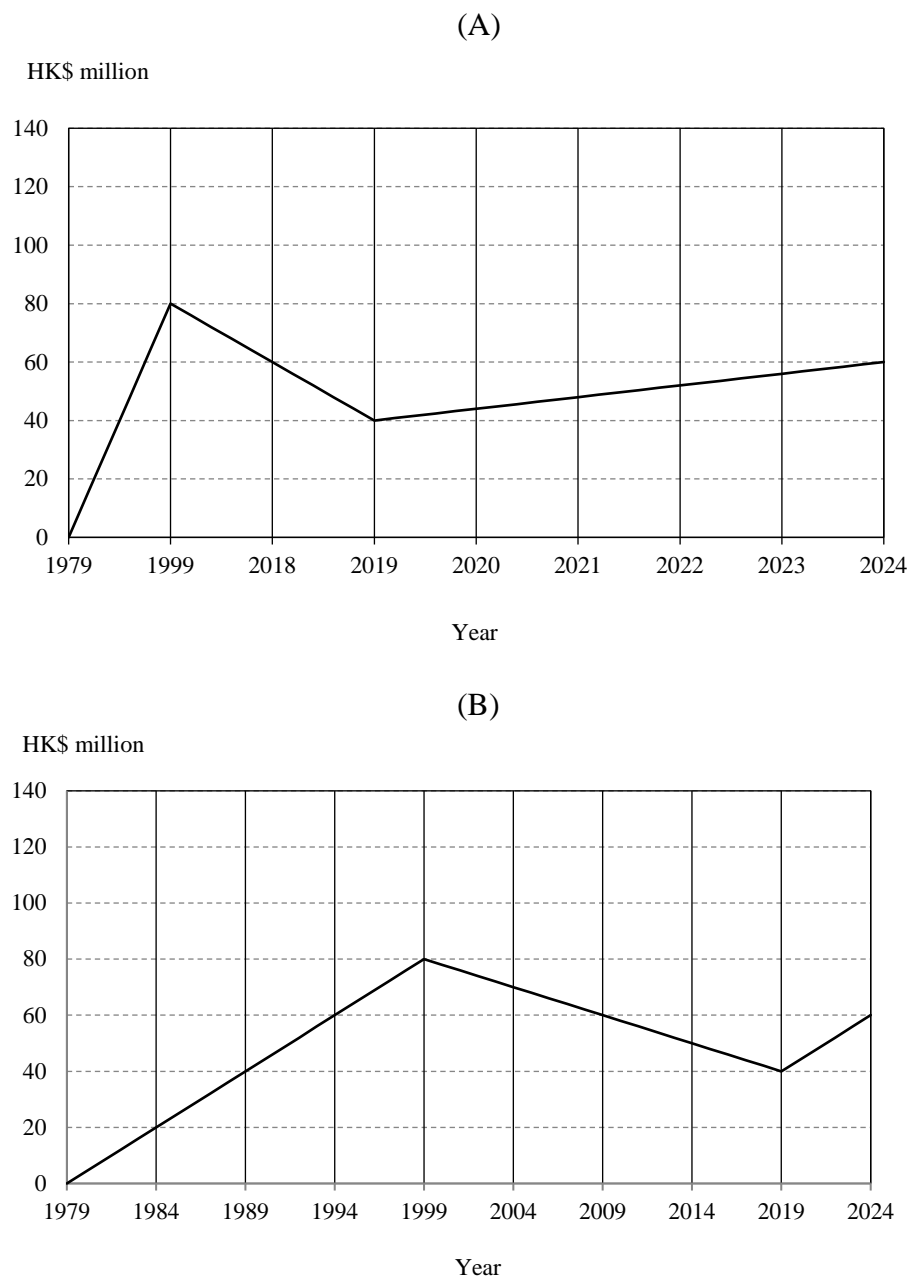
Illusions caused by 3-D charts

Chart 6.14

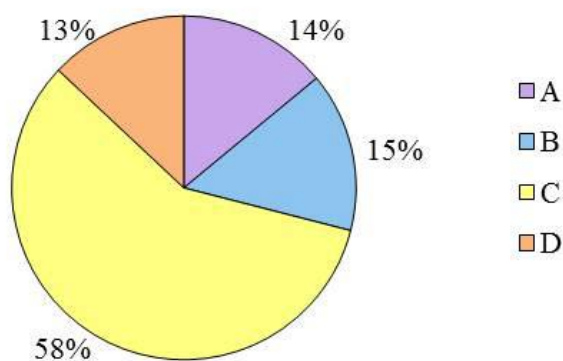3-D charts may confuse the readers about the relative size of the portions.

(A)

Sales of Company X by Salesperson

2-D charts are clearer and should be used instead.

(B)

Sales of Company X by Salesperson

6 Uses and misuses of statistics

References

Croxton, Frederick E., *Applied General Statistics*, Chapter 1, Prentice-Hall, 2011.

Ilersic, A.R. and Pluck, R.A., *Statistics*, Chapter XVII, XVIII and XIX, HFL Ltd., 1979.

Moroney, M.J., *Facts from Figures*, Penguin Books Ltd., 1990.

Reichmann, W.J., *Use and Abuse of Statistics*, Penguin Books Ltd., 2021.

Interactive quiz

You may test the knowledge you have learnt in this Chapter by trying this interactive quiz.   Answers to the questions can be found in the relevant paragraphs of this Chapter.

6 Uses and misuses of statistics

Exercise

Misuse of base figure for comparison

1. Bank Y charges very high interest rates.

    A man borrowed $100,000 from Bank Y for 15 days.   He received only $80,000 in cash.   The remaining $20,000 was deducted as interest for the 15-day period.

    Bank Y claimed that the interest rate was 20%
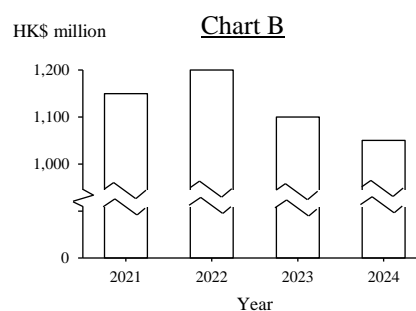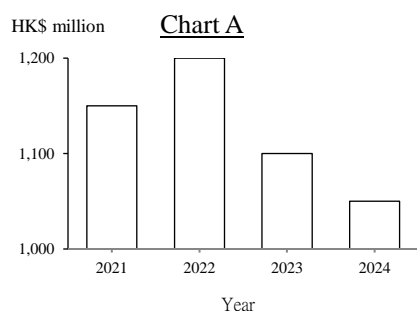   (i.e. $20,000/$100,000×100%) per 15 days.   Is this correct?

2. The price of an article A was $100 in 2023 and $50 in 2024.   This means that the price of A in the period has decreased by

    ☐   50%
    ☐   100%
    ☐   150%
    ☐   200%

Mis-presentation of data

3. Which one of the following charts is visually distorted and should not be used?

    ☐   Chart A
    ☐   Chart B

Misuses of statistics in daily endeavours

4. Readers can collect materials from newspaper cuttings, articles in magazines and commercials on television which may appear to involve misuses of statistics. Readers may then examine various aspects of such examples and analyse whether these are misuses of statistics.   Subsequently, readers may make suggestions on how the errors can be rectified, or how the presentation can be improved.

7 Rate, ratio, proportion and percentage

Introduction

Very often, a figure is not meaningful unless it is compared with another figure. For instance, there may be 100 cinemas in a certain city. This may seem to be a large figure. However, when compared with the city's population (say, 10 million), this represents 1 cinema to every 100 000 persons. On the other hand, suppose there are only 10 cinemas in another city. The number may look small, but if the population of the city is only 100 000, each cinema actually serves only 10 000 persons.

Let us look at another example. Suppose there is an increase of 1 000 participants in a certain medical scheme. This may appear to be a remarkable increase. However, if the scheme originally consists of 100 000 participants, the increase is only 1%. On the contrary, an increase of 100 participants in a scheme originally with 500 participants represents a substantial increase of 20%.

"Relative numbers", which are derived by comparing two related figures[1], are generally more useful than "absolute figures" for data analyses. Rate, ratio, proportion and percentage are examples of some commonly used relative numbers.

Rate

"Rate" is obtained by expressing the measurement of something per unit of something else. The quantities compared are not necessarily of the same kind and hence rate often bears a unit. An example of rate is car speed, say 50 km per hour. Another example is population density, which is calculated by dividing the size of population in a district by the area of the district. The rate of 1 cinema per 100 000 persons mentioned above is also another example describing the degree of availability of movie entertainment facilities.

In the compilation of "rates", the choice of correct bases is very important, otherwise the results would be misleading. For accurate comparison of "rates", a base closely related to the target figures to be measured should be used. For example, to calculate the voting rate of a city, the total number of citizens having the right to vote as the base is considered more appropriate than using the total number of citizens in the city as the base.

Note :
(1) Comparisons are meaningful only when the base figures are not too small. Thus, it would not be meaningful to make a statement that 25% of the members of a household are sick when 1 out of its 4 members falls ill.

7 Rate, ratio, proportion and percentage

With different rates compiled from smaller groups of a population, we often want to get an overall picture for the whole population concerned.　However, one should be cautious that individual rates with different bases should not be added together for getting the overall rate.

Ratio

"Ratio" is another way of expressing the relationship between figures.　It is normally derived by comparing quantities of the <u>same</u> kind and therefore unlike rate, it does not bear a unit.　Sometimes, the relationship is expressed as <u>a ratio to one</u>.　For example, the ratio between boys and girls in a class is 3 : 1.　However, if it suits our purpose better, we can express the relationship as a ratio to any other number (i.e. other than 1). For the previous example, the ratio between boys and girls can also be written as 30 : 10.

Proportion and percentage

"Proportion" and "percentage" are special types of ratio.　"Proportion" relates a "part" to the "whole"; while "percentage" is the case where the relationship between figures is presented as a ratio to one hundred.

Some frequently used relative numbers

Crude death rate

The crude death rate for a given calendar year is obtained by dividing the number of known deaths occurring in a community during that calendar year by the mid-year population of that community, and expressing the result in terms of deaths per 1 000 population.

In 2024, the number of known deaths in Hong Kong was 51 400[#] and the mid-year population was 7 524 100.　The crude death rate for 2024 was therefore 6.8[#] per 1 000 population.

Age-sex specific death rate

Mortality varies significantly with age and sex.   To study in greater depth the pattern of mortality of people in different age groups and sex, the age-sex specific death rates (or age-sex specific mortality rates) may be referred to.   This rate is expressed as the number of known deaths per 1 000 population in the same age group and same sex. For example:

$$
\begin{array}{c}
\text{Age-sex specific} \\
\text{death rate for males} \\
\text{in the age group 60-64}
\end{array}
=
\frac{
\begin{array}{c}
\text{Number of known deaths of} \\
\text{males in the age group 60-64}
\end{array}
}{
\begin{array}{c}
\text{Number of males} \\
\text{in the age group 60-64}
\end{array}
}
\times \ 1\,000
$$

Crude birth rate

Similar to crude death rate, crude birth rate is calculated by dividing the number of known live births during a calendar year by the mid-year population for that year, and expressing the result in terms of births per 1 000 population.

In 2024, the number of known live births in Hong Kong was 36 700 and the mid-year population was 7 524 100.   The crude birth rate for 2024 was therefore 4.9 per 1 000 population.

Unemployment rate

The unemployment rate is obtained by dividing the total number of unemployed persons by the labour force in the community.   The labour force or economically active population refers to the land-based non-institutional population aged 15 and over who satisfy the criteria for inclusion in the employed population or unemployed population.   The unemployment rate of Hong Kong was 3.0% in 2024.

Industrial accident rate in the manufacturing sector

The industrial accident rate in the manufacturing sector is expressed as the number of reported casualties per 1 000 manufacturing workers.   The structure of this relative number, with the number of manufacturing workers as the base, highlights the fact that the base figure should relate to the subject matter in question as much as possible.   (In this case, manufacturing workers are those "at risk" of industrial accidents and the number of such workers is used as the base.)   In 2024, the industrial accident rate in the manufacturing sector in Hong Kong was 10.0 per 1 000 manufacturing workers.

7 Rate, ratio, proportion and percentage

Crime rate

Crime rate is usually expressed as the number of cases of reported crime per 100 000 population.   In 2024, the crime rate for Hong Kong was 1 259 per 100 000 population.

Age specific prosecution rates

To study in greater depth the tendency of committing crimes by people in different age groups, the age specific prosecution rates may be referred to.   This rate is usually expressed as the number of persons prosecuted per 100 000 population in the same age group.   For example:

$$\text{Age specific prosecution rate for the age group 16-20} = \frac{\text{Number of persons in the age group 16-20 who are prosecuted}}{\text{Number of persons in the age group 16-20}} \times 100\ 000$$

Sex ratio

The relationship of the number of males to the number of females in a population is given by the sex ratio, which presents the number of males per 1 000 females.

As in mid-2024, there were 3 417 900 males and 4 106 200 females in Hong Kong. Thus, the sex ratio was 832 males per 1 000 females.

Proportion of domestic households residing in subsidised home ownership housing

To relate the number of domestic households residing in subsidised home ownership housing[2] to the total number of domestic households in Hong Kong, we can obtain the proportion of domestic households residing in subsidised home ownership housing.

The proportion of domestic households residing in subsidised home ownership housing was 15.4% in 2024.

Note :
(2)   Subsidised home ownership housing includes flats built under the Home Ownership Scheme, Middle Income Housing Scheme, Private Sector Participation Scheme, Green Form Subsidised Home Ownership Scheme, Buy or Rent Option Scheme and Mortgage Subsidy Scheme, and flats sold under the Tenants Purchase Scheme of the Hong Kong Housing Authority.   It also includes flats built under the Flat-For-Sale Scheme, Sandwich Class Housing Scheme and Subsidised Sale Flats Projects of the Hong Kong Housing Society, and flats in Urban Renewal Authority Subsidised Sale Flats Scheme.   As from the first quarter of 2002, subsidised sale flats that can be traded in open market are excluded.

7 Rate, ratio, proportion and percentage

Percentage of population by age group

The percentage of population by age group is obtained by dividing the total number of people in a particular age group by the total population size and then multiplying by 100.

As in mid-2024, 10.0% of people in the Hong Kong population were aged under 15, 67.2% aged 15-64 and 22.8% aged 65 and over.

Proper use of relative numbers

Care must be taken when handling or interpreting relative numbers; otherwise we may arrive at incorrect conclusions or mislead other people. The following are two examples to illustrate this.

Example 1 **Land-based non-institutional population by District Council district, 2014 and 2024[3]**

| District Council district | Land-based non-institutional population | | | |
| | 2014 | | 2024 | |
	No.	% of total	No.	% of total
Central and Western	248 200	3.5	229 400	3.1
Wan Chai[4]	150 300	2.1	162 000	2.2
Eastern[4]	576 200	8.1	514 400	6.9
Southern	269 800	3.8	254 700	3.4
Yau Tsim Mong	313 900	4.4	299 700	4.0
Sham Shui Po	386 700	5.4	432 300	5.8
Kowloon City	401 600	5.6	412 500	5.5
Wong Tai Sin	424 100	5.9	406 700	5.5
Kwun Tong	639 200	8.9	662 400	8.9
Kwai Tsing	501 500	7.0	491 600	6.6
Tsuen Wan	300 400	4.2	306 200	4.1
Tuen Mun	489 000	6.8	531 000	7.1
Yuen Long	595 500	8.3	671 100	9.0
North	303 500	4.2	338 400	4.6
Tai Po	301 200	4.2	327 900	4.4
Sha Tin	647 400	9.1	698 900	9.4
Sai Kung	449 000	6.3	498 200	6.7
Islands	144 700	2.0	195 300	2.6
Whole Territory	7 142 000	100.0	7 432 500	100.0

Notes :
(3)   Figures may not add up to the total due to rounding.
(4)   The boundaries of Wan Chai and Eastern having been adopted since 2016 are different from those adopted in 2015 and earlier years.   Therefore, figures of Wan Chai and Eastern for 2016 and thereafter are not strictly comparable with those for 2015 and earlier years in this table.

Comparing the percentage figures for 2014 and 2024, one may notice that the figures for Central and Western, Eastern, Southern, Yau Tsim Mong, Kowloon City, Wong Tai Sin, Kwai Tsing and Tsuen Wan have decreased.   For instance, the drops for Eastern and Kowloon City were 1.2 "percentage points[5]" and 0.1 "percentage point" respectively.

One may arrive at a wrong conclusion that these districts have become less populated. In fact, a decrease in the share does not necessarily imply there is a decrease in the actual number.   Take Kowloon City as an example.   Despite a decrease of 0.1 percentage point in share, the number of land-based non-institutional population of Kowloon City actually increased by 10 900 persons, or 2.7% (i.e.(412 500 – 401 600) / 401 600 x 100%).

This situation can be attributed mainly to the increase in the total number of land-based non-institutional population over the period.   The percentage shares of population in certain districts decreased relatively.

Merely mentioning the drop in the proportion of population, though correct, may not create a right impression for the less statistically-minded people.   Referring to both the numbers and the proportions of population will enable the presentation of a more complete and accurate picture.

Note :

(5)   "Percentage point" refers to the absolute sum or difference between two rates or percentages, which is obtained by direct addition or subtraction of the figures concerned.   As a matter of fact, an increase of x percentage points and an increase of $x\%$ are not the same.   Suppose the passing rates of two different rounds of examination for a class of students were 80% and 84% respectively, the passing rate increased by 4 percentage points (84% – 80% = 4 percentage points). Alternatively we can also say that the passing rate recorded an increase of 5% (i.e. (84 – 80)/80×100%).   However, the second way of presentation is generally not recommended.

Example 2   **Registered deaths due to external causes of morbidity and mortality in Hong Kong by age group, 2023**[6],[7],[8],[9]

Age group	No. of registered deaths		Population at mid-2023	No. of registered deaths per 100 000 persons in the age group
0-24	114	(4.8%)	1 391 500	8.2
25-49	544	(22.9%)	2 676 600	20.3
50-74	965	(40.6%)	2 819 400	34.2
75 and over	749	(31.5%)	648 600	115.5
Total	2 377[10]	(100.0%)	7 536 100	

Someone may make such a statement based on the above table:

"In 2023, the majority of the registered deaths due to external causes of morbidity and mortality, were persons aged 50-74 (40.6%), followed by persons aged 75 and over (31.5%)."

This may give a misleading impression that the death situation for people aged 50-74 was worse than that for people aged 75 and over.   If we look at the table carefully, the death rate of people aged 50-74 (34.2 per 100 000 persons) was far lower than that of those aged 75 and over (115.5 per 100 000 persons).

It should be noted that the "statement" itself is not wrong.   However, the proper way of describing the situation is to present other relevant facts as well, so as to provide a comprehensive description of the overall situation.

Notes :

(6)   The figures are based on deaths registered under the Births and Deaths Registration Ordinance (Cap. 174, Laws of Hong Kong) during the specified period.

(7)   Classification of diseases and causes of death is based on the International Statistical Classification of Diseases and Related Health Problems (ICD) 10th Revision.

(8)   Individual percentages may not add up to 100 due to rounding.

(9)   According to the ICD 10th Revision, when the morbid condition is classifiable under Chapter XIX as "Injury, poisoning and certain other consequences of external causes", the codes under Chapter XX for "External causes of morbidity and mortality" should be used as the primary cause of death.

(10)   Including registered deaths of unknown age.

7 Rate, ratio, proportion and percentage

Reference

Croxton, Frederick E., *Applied General Statistics*, Chapter 7, Prentice-Hall, 2011.

Interactive quiz

You may test the knowledge you have learnt in this Chapter by trying this interactive quiz.   Answers to the questions can be found in the relevant paragraphs of this Chapter.

Exercise

Calculating "rate"

Consider the following hypothetical example for studying the passing rate of an open examination :

Broad area / District Council district		Population in 2024	No. of students sitting for the examination in 2024	No. of students passing the examination in 2024
Hong Kong Island	Central and Western	229 400	60 293	44 014
	Wan Chai	162 000	41 110	28 366
	Eastern	514 400	144 528	93 943
	Southern	254 700	63 142	44 831
Kowloon	Yau Tsim Mong	299 700	57 773	36 397
	Wong Tai Sin	406 700	85 917	51 550
	...	...	...	...
New Territories	Sha Tin	698 900	138 281	76 055
	Tai Po	327 900	156 552	60 494
	...	...	...	...
Whole Territory		7 432 500	1 403 211	841 927

(i) Comment on the statement :
"The overall passing rate of the examination in 2024 was 11.3%, i.e. (841 927 / 7 432 500) x 100 %."

(ii) Calculate the passing rates for the 4 District Council districts on Hong Kong Island and the overall passing rate for Hong Kong Island.

(iii) Suppose the number of students passing the examination in Wan Chai in 2019 was 23 479. Can it be concluded that since there was an increase in the number of students passing the examination (28 366) in 2024, the academic results of students in Wan Chai had improved during the period from 2019 to 2024?

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8 Measures of central tendency

Introduction

Given a set of data, it is often required to describe them in terms of a single value around which the data are distributed. This value is a measure of "central tendency", indicating the central position of the given set of data.

There are different choices for the measurement of central tendency. The most common ones are arithmetic mean (or briefly "the mean"), median and mode. These measures of central tendency are applied in different situations depending on the nature of data and the intended purpose.

Mean

The arithmetic mean of a set of data is defined as the sum of the values of the given set of data divided by the number of data points.

$$\overline{X} = \frac{X_1 + X_2 + \ ... \ + X_N}{N}$$

where $\overline{X}$ is the mean;
           N is the total number of data points; and
           X_i is the value of the ith data point, for $i = 1, 2, ..., N$

Examples :

(1)   The mean height of the students in a class is 1.62 m.

(2)   The mean daily maximum air temperature for the year 2024 was 27.3°C. (The method is to find out the maximum air temperature recorded for each of the 366 days in the year 2024 and then calculate the arithmetic mean of the 366 data points.)

8　Measures of central tendency

Median

The median of a set of data is the middle value of the given set of data when they are arranged in order, either ascending or descending, of magnitude.　In case there are two middle values (i.e. when the data set has an even number of data points), then the median is the arithmetic mean of these two middle values.

Examples :

(1)　The median of the set of numbers　{ 4, 6, 7, 9, 10 }　is 7.

(2)　The median of the set of numbers　{ 1, 3, 4, 4, 7, 9, 10, 11, 13, 14 }　is (7+9) / 2, i.e. 8.

(3)　The median monthly household income of domestic households in Hong Kong in 2024 was $30,000.　In other words, 50% of the domestic households in Hong Kong had a household income more than $30,000 per month in 2024 while the other 50% had less than $30,000 per month.

(4)　The median age of men who married for the first time in Hong Kong in 2024 was 32.6.

Mode

The mode of a set of data is the value which occurs with the largest frequency, i.e. the most common value in the given set of data.　The mode may not exist, and even if it does exist, it may not be unique.

Examples :

(1)　The set of numbers　{ 1, 3, 3, 5, 7, 8, 8, 8, 9, 10, 10, 11, 12 }　has a mode of 8.

(2)　The set of numbers　{ 2, 3, 4, 6, 8, 9 }　does not have any mode.

(3)　The set of numbers　{ 1, 3, 4, 4, 4, 6, 7, 7, 9, 9, 9, 10, 12 }　has two modes, 4 and 9.

(4)　The modal domestic household size in Hong Kong was 2 in 2024.

8 Measures of central tendency

Grouped data

When presenting a large set of data, it is often useful to classify the data into different classes and to find out the number of data points belonging to each class (i.e. the class frequency).   Data organised in this way are called grouped data whereas a tabular arrangement of the data by class showing the corresponding class frequency is called a frequency distribution or frequency table.

Example :

The weights (in kg) of individual students in a class are as follows :

61, 62, 63, 63, 63, 64, 64, 64, 64, 65, 65, 65, 66, 66, 66,
66, 66, 67, 67, 67, 67, 68, 68, 68, 69, 69, 69, 69, 70, 70

To help give a clear overall picture of the weights of the students, the above 30 data points can be re-organised into several classes and a frequency distribution can be constructed.

Step 1   Determine the largest and smallest values in the data set and find the range (i.e. the difference between the largest and smallest values).
    Smallest value =   61
    Largest value   =   70
    Range   =   9   (i.e. $70 - 61$)

Step 2   Divide the range into a convenient number of classes having the same size (i.e. same class interval[1]).   The number of classes usually ranges from 5 to 20, depending on the values of the data.

Given that there are only 30 data points in the data set, it is not appropriate to divide the range into a large number of classes (otherwise there will be too few observations in each class).   In this example, it is sensible to divide the data set into 5 classes.   The class intervals to be used are thus :

61 - 62;
63 - 64;
65 - 66;
67 - 68; and
69 - 70

Note :
(1)   The smaller value of each class interval shown above is called the lower class limit and the larger value the upper class limit.   The mid-point of the class interval is known as the class mark.

Step 3   Find the class frequency for each class and then construct the frequency distribution.

Weight[2] (kg)	Number of students
61 - 62	2
63 - 64	7
65 - 66	8
67 - 68	7
69 - 70	6
Total	30

Histogram

A histogram is a bar chart, with no space between the bars.   It is commonly used for presenting frequency distributions of grouped data with continuous class boundaries, with class boundaries shown as points on the horizontal axis and the frequencies as units on the vertical axis.   The frequency in a class is proportional to the area of a bar with the base as the class interval.   (Please see Chart 8.1 below which is a histogram for the grouped data of the example mentioned above.)

Chart 8.1   Histogram of the number of students
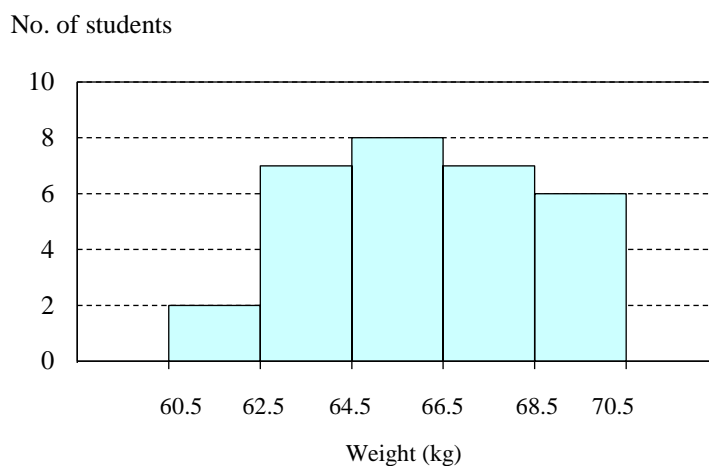
The population pyramid may be visualised as being formed from two horizontally placed histograms, one being the age distribution of males and the other being the age distribution of females.

Note :

(2)   If the weights are rounded to the nearest kg, the class interval, say, 61 kg-62 kg, theoretically includes all measurements from 60.5000…kg to 62.4999…kg.   These two class limits, indicated briefly by the exact numbers 60.5 kg and 62.5 kg, are called true class limits or class boundaries.

# 8 Measures of central tendency

Cumulative frequency polygon

For some purposes, it is desirable to consider the total frequency of all values greater than the lower class boundary of each class (i.e. the "more than" basis for counting total frequency) or the total frequency of all values less than or equal to the upper class boundary of each class (i.e. the "less than" basis for counting total frequency). In such circumstances, it is necessary to construct the cumulative distribution (in tabular form) or the cumulative frequency polygon (in graphical form).

To construct a cumulative frequency polygon, frequencies accumulated for each class are plotted at the lower class limits when the "more than" basis is used. When the "less than" basis is used, cumulated frequencies are plotted at the upper class limits.

Regardless of the basis used, the Y-axis should be drawn long enough to accommodate the total frequency. The points, each representing the cumulative frequency of a particular class, are then joined by a series of straight lines and the S-curve so obtained may be extended to touch the X-axis by dropping a perpendicular line from its highest point. The polygon so formed is a cumulative frequency polygon. (Please see Chart 8.2 below which is a cumulative frequency polygon for the grouped data of the example mentioned above.)

Chart 8.2   Cumulative frequency polygon of the number of students
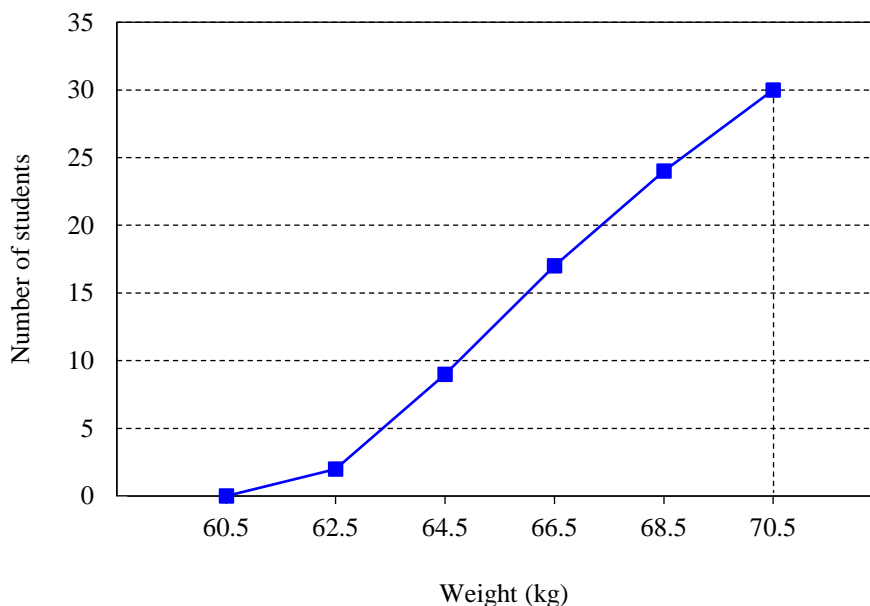
The cumulative frequency polygon is particularly useful for interpolation. However, it is important to note that the use of straight lines to connect the series of known points is only an approximation to the frequency distribution of the items within any given interval. Nevertheless, this approximation is considered to be sufficiently accurate under most circumstances.

Mean of grouped data

The formula to be used to calculate the mean of a set of grouped data is as follows:

$$\overline{X} = \frac{f_1 X_1 + f_2 X_2 + \; \ldots \; + f_k X_k}{f_1 + f_2 + \; \ldots \; + f_k}$$

where $\overline{X}$ is the mean;

                  X_i is the class mark (i.e. mid-point of the class interval) of the ith class, for $i = 1, 2, \ldots, k$; and

                  f_i is the frequency of the ith class, for $i = 1, 2, \ldots, k$

The mean thus obtained depends on the way the data are grouped and is only an approximation.   However, it reduces the burden of numerical calculation.

8 Measures of central tendency

Finding the median of grouped data from histogram

Making use of the histogram, an approximation of the median of a set of grouped data can be found.

Step 1   Construct the histogram for the data set (please see Chart 8.3 below).

Step 2   Identify the median class, i.e. the class which contains the "middle value".

Step 3   Calculate the sum of frequencies of classes lower than the median class, $(\Sigma f)_l$.

Step 4   Find f, using the expression $f = N/2 - (\Sigma f)_l$

where N is the total frequency; and

$(\Sigma f)_l$ is the sum of frequencies of classes lower than the median class

Step 5   Construct a diagonal in the median class.   The line should be drawn from the lower left corner to the upper right corner (AB).

Step 6   At the height corresponding to "f" found in step 4, draw a horizontal line (CD) to cut the median class.   The line will intersect with the diagonal (E).

Step 7   Drop a perpendicular line from this point of intersection (E) to the X-axis. The point thus located on the X-axis (F) will give the value of the median.
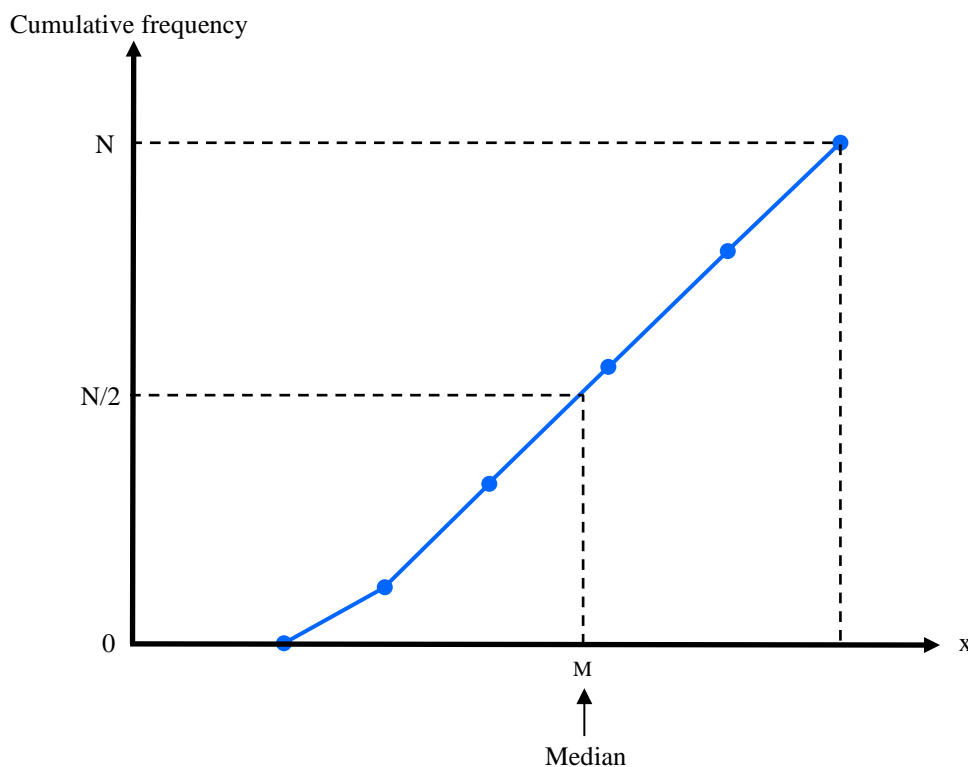
Chart 8.3
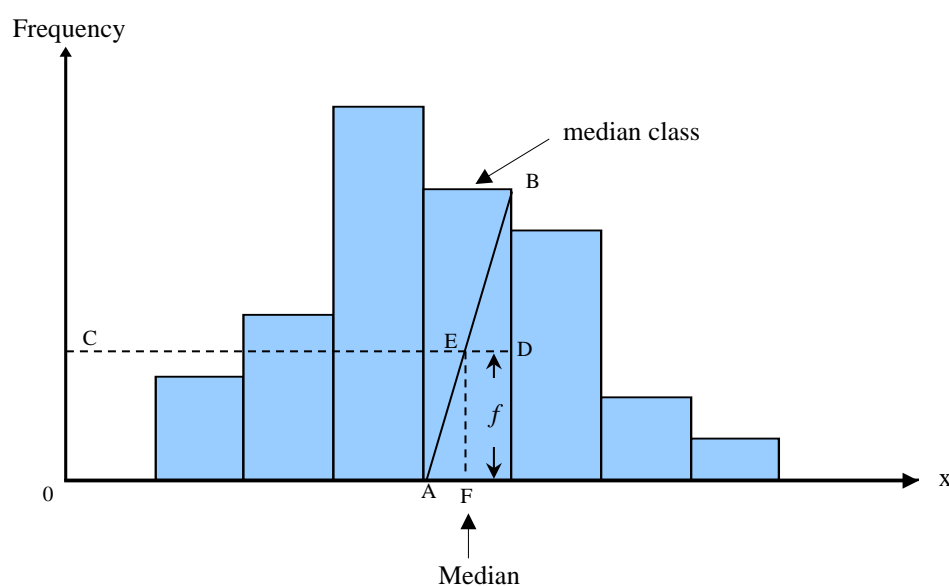
Finding the median of grouped data from cumulative frequency polygon

Another graphical method of finding the median is to draw a cumulative frequency polygon.

Step 1   Construct the cumulative frequency polygon for the data set (please see Chart 8.4 below).

Step 2   At the cumulative frequency height $N/2$ (N is the number of data points), draw a horizontal line until it touches the cumulative frequency polygon.

Step 3   Draw a perpendicular line from this point of intersection to the X-axis.   The point thus located on the X-axis (M) will give the value of the median.

Chart 8.4

Finding the mode of grouped data from histogram

A rough estimate of the mode can also be found with the use of the histogram.

Step 1   Construct a histogram for the data set (please see Chart 8.5 below).

Step 2   Identify the modal class, i.e. the class with the largest frequency.

Step 3   Draw 2 diagonals as shown in Chart 8.5 (AB and CD).

Step 4   Drop a vertical line from the point of intersection of these 2 diagonals (E) to the X-axis.   The point thus located on the X-axis (F) will give the value of the mode.

Chart 8.5
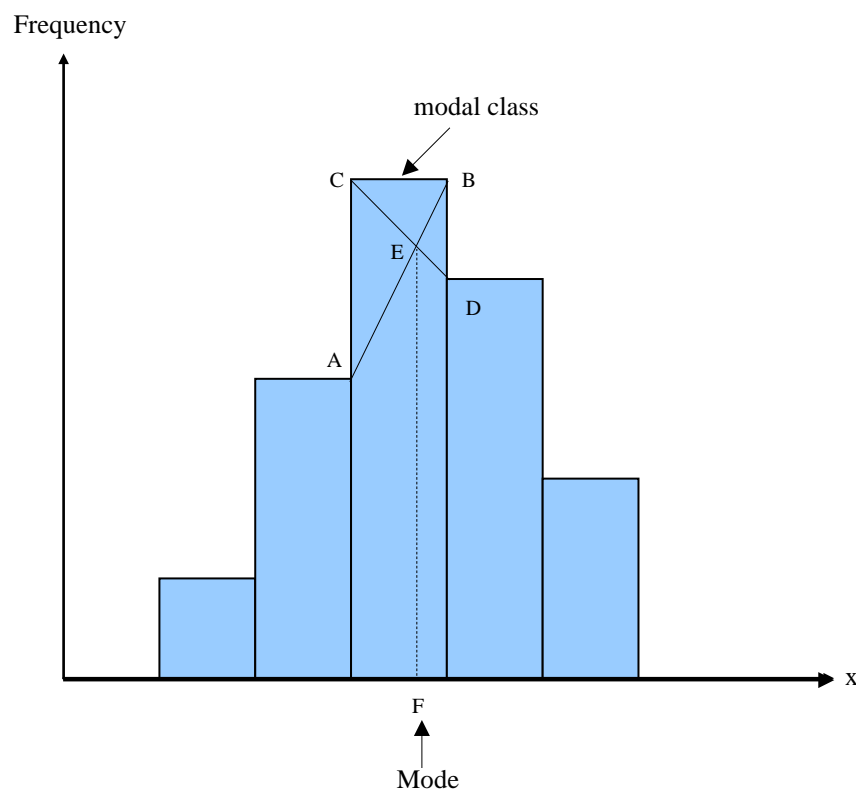
Use of mean and median

The mean is the most widely used among all the measures of central tendency, because it has a lot of desirable properties in statistical theories.

For an approximately symmetric set of data such as $\{\,13, 14, 15, 17, 18.5\,\}$, the mean 15.5 gives the central location effectively.

The mean, however, is affected by the value of every item in the set of data, and the presence of a few extremely large (or extremely small) items may result in a mean which could be misleading. For example, for the data set $\{\,1\,000, 2\,000, 3\,000, 3\,500,$ $4\,500, 5\,000, 30\,000\,\}$, the mean is 7 000 which is not a good measure of the central tendency. However, the median, 3 500, is more satisfactory because the existence of a few extreme values generally would not cause the median to fluctuate much.

In daily life, the mean monthly household income is easily affected by extreme values. Hence, the median is more suitable than the mean in measuring the central tendency of household income. In 2024, the median monthly household income of domestic households in Hong Kong was $30,000.

Supplementary notes - weighted mean

Sometimes, we associate the data (X_1, X_2, ..., X_k) with certain weighting factors or weights (W_1, W_2, ..., W_k), depending on the significance or importance attached to the individual data points. In this case,

$$\overline{X} = \frac{W_1 X_1 + W_2 X_2 + \ ... \ + W_k X_k}{W_1 + W_2 + \ ... \ + W_k}$$

The mean of a set of grouped data is in fact a mean of the class marks weighted by the class frequencies.

Normally, the use of the weighted mean leads to a different conclusion from that using the unweighted mean. In fact, the concept of weighted mean is commonly used in daily life.

Example :

The following is a summary of the grade points of the final examination and the mid-term test scored by two students A and B, with the final examination grades weighted 3 times as much as the mid-term test grades :

| | Grade points | | Weights |
	A	B	
Final examination	82	90	3
Mid-term test	78	66	1

If the weights are disregarded,

the mean score of A $= \dfrac{82+78}{2} = \underline{\underline{80}}$, and

the mean score of B $= \dfrac{90+66}{2} = \underline{\underline{78}}$.

We would say that A did better than B.

On the other hand, if the weights are taken into consideration,

the weighted mean score of A $= \dfrac{82 \times 3 + 78 \times 1}{3+1} = \underline{\underline{81}}$,

and

the weighted mean score of B $= \dfrac{90 \times 3 + 66 \times 1}{3+1} = \underline{\underline{84}}$.

We would then say that B did better than A.

8 Measures of central tendency

References

Croxton, Frederick E., *Applied General Statistics*, Chapter 9, Prentice-Hall, 2011.

Spiegel, Murray R., *Theory and Problems of Statistics*, Chapter 3, Schaum Publishing Co., 1992.

Interactive quiz

You may test the knowledge you have learnt in this Chapter by trying this interactive quiz.   Answers to the questions can be found in the relevant paragraphs of this Chapter.

8 Measures of central tendency

Exercise

Calculating mean, median and mode

1. Consider a set of figures：

   { 1, 9, 3, 7, 8, 12, 9 }

   (i)   What is the sum of these seven values?

   (ii)   What is the mean?

   (iii)   What is the median?

   (iv)   What is the mode?

   (v)   Is the median equal to the mean of the same seven values?

   (vi)   Are the mean and median the same when the set of figures is { 1, 3, 7, 11, 13 } ?

   (vii) When the mean and median of a set of data are the same, what does this suggest?

2. The mean of   { 10, 20, 30, 40, 50 } is

   ☐   30
   ☐   35
   ☐   40
   ☐   45

3. The mode of   { 3, 10, 13, 24, 29, 30, 31 } is

   ☐   20
   ☐   24
   ☐   31
   ☐   Mode does not exist in this set of figures

4. When half of the elements of a population are smaller than a value X and half are greater than it, X is the

☐ Mean

☐ Median

☐ Mode

5. Among mean, median and mode, which one is the most easily affected by extreme values?

☐ Mean

☐ Median

☐ Mode

9 Measures of dispersion

Introduction

Information on the central tendency of a set of data alone is not sufficient to describe its distribution.   For instance, two groups of data may have the same mean, yet having different degrees of spread among the data points.   To have a better knowledge of a set of data, it is necessary to measure the extent to which individual values vary within the set, or equivalently, the extent to which individual values vary around the mean.
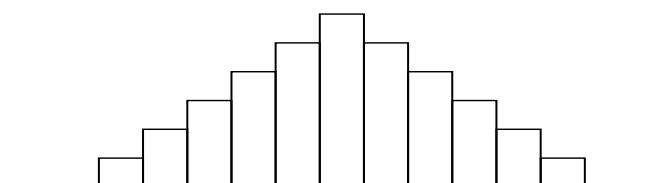
The degree to which numerical data tend to spread around the mean value is called the dispersion of the data.   Various measures of dispersion are available.   The more common ones are range, mean deviation, variance and standard deviation.

Chart 9.1   Various degrees of variation

Small variation
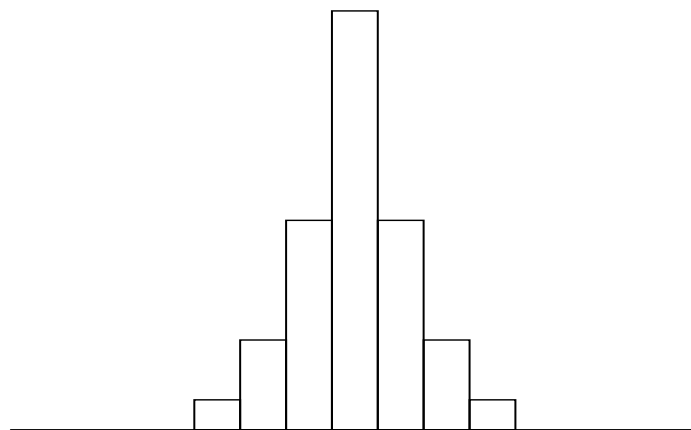
Large variation

9 Measures of dispersion

Range

The range of a set of numbers is the difference between the maximum and the minimum values.　This measure is greatly affected by extreme values.　The advantage of this measure is simplicity.　The disadvantage is that it does not take the intermediate values into account at all.

Chart 9.2　　Range

The following two sets of data have the same range but different dispersions:
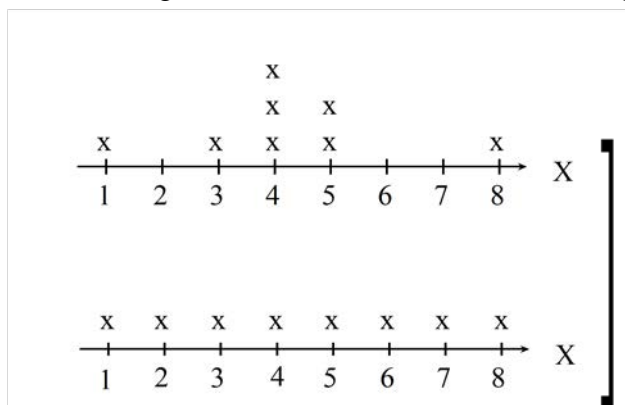
Range of both sets of
data = 8 − 1 = 7

Mean deviation (Mean absolute deviation)

Mean deviation, also known as mean absolute deviation, is a measure summarising how large the extent a data set deviates from its mean, irrespective of the direction of spread of individual data points in the set.　For a given set of numerical data, the mean deviation is defined as the sum of the absolute deviations (i.e. the absolute values of the deviations from the mean) of individual data points divided by the total number of data points.

$$md = \frac{\left|X_1 - \overline{X}\right| + \left|X_2 - \overline{X}\right| + \cdots + \left|X_N - \overline{X}\right|}{N}$$

$$= \frac{\sum_{i=1}^{N}\left|X_i - \overline{X}\right|}{N}$$

where　　md　　　　is the mean deviation;

$\overline{X}$　　　　is the mean;

N　　　　is the total number of data points;

X_i　　　　is the value of the ith data point, for $i = 1, 2, …, N$; and

$\left|X_i - \overline{X}\right|$ is the absolute value of the deviation from the mean of the ith data point, for $i = 1, 2, …, N$

9 Measures of dispersion

For example, considering a set of data $\{13, 3, 5, 1, 8\}$ which has a mean of 6. By subtracting the mean from each of the data points in the set, the deviations[1] from the mean can be found, which are 7, -3, -1, -5 and 2 respectively.

The mean deviation of the set of data can then be computed by finding the simple average of the absolute deviations:

$$\frac{7+3+1+5+2}{5} = \underline{\underline{3.6}}$$

This tells that the data points within the given set lie on average 3.6 units from their mean of 6.

From the above example, it can be seen that if we simply add up individual deviations, a zero sum will be obtained despite the dispersion of the data points around the mean. This is because the negative deviations will balance the positive deviations. To avoid such problem, the absolute values of the deviations, or absolute deviations, are used in the computation of the mean deviation. With the negative signs of those negative deviations removed, only the "distances" but not the "directions" in which individual data points spread away from the mean are indeed considered.

Another point worth noting is that the sum of absolute deviations is highly sensitive to the total number of data points in the given set of data. For two sets of data with same degree of dispersion, the set which has more data points is bound to have a greater sum of absolute deviations. To enable comparisons of data sets of different sizes to be made, it is essential to discount the size effect by dividing the sum of absolute deviations by the total number of data points.

Note :

(1) Some of the deviations derived are negative. This shows that the values of the data points concerned are smaller than the mean. Conversely, the deviations will be positive when the data points have a value larger than the mean.

9 Measures of dispersion

Variance

The average of the squared deviations from the mean is called the variance.

$$\sigma^2 = \frac{\left(X_1 - \overline{X}\right)^2 + \left(X_2 - \overline{X}\right)^2 + \cdots + \left(X_N - \overline{X}\right)^2}{N}$$

$$= \frac{\sum_{i=1}^{N}\left(X_i - \overline{X}\right)^2}{N}$$

where
- σ^2 is the variance;
- $\overline{X}$ is the mean;
- N is the total number of data points;
- X_i is the value of the ith data point, for $i = 1, 2, \ldots, N$; and
- $\left(X_i - \overline{X}\right)^2$ is the squared deviations from the mean of the ith data point, for $i = 1, 2, \ldots, N$

In our example above, the variance of the data set is 17.6

(i.e. $\frac{7^2 + (-3)^2 + (-1)^2 + (-5)^2 + 2^2}{5}$).

This is another way of measuring the size of the deviations irrespective of their signs, since squares of positive and negative numbers are all positive.

9 Measures of dispersion

Standard deviation

The variance measures the scatter of the data points from their mean, but it is expressed in "squared units".   To return it to the original unit of measurement, one takes the square root of the variance.   This gives a measure known as standard deviation.

$$\sigma = \sqrt{\frac{\left(X_1 - \overline{X}\right)^2 + \left(X_2 - \overline{X}\right)^2 + \cdots + \left(X_N - \overline{X}\right)^2}{N}}$$

$$= \sqrt{\frac{\sum_{i=1}^{N}\left(X_i - \overline{X}\right)^2}{N}}$$

where
σ is the standard deviation;

$\overline{X}$ is the mean;

N is the total number of data points;

X_i is the value of the ith data point, for $i = 1, 2, …, N$; and

$\left(X_i - \overline{X}\right)^2$ is the squared deviations from the mean of the ith data point, for $i = 1, 2, …, N$

In our example above, the standard deviation of the data set is 4.2 (i.e. $\sqrt{17.6}$).

Both variance and standard deviation are commonly used measures of the spread of data, as they can be used for other more sophisticated statistical calculations.

In general, for two sets of data with equal (or more or less similar) values of mean, the set with a higher variance and standard deviation has a distribution with bigger dispersion.

9 Measures of dispersion

Application of some measures of dispersion

Example 1 : Standard scores (Z)

$$Z = \frac{X_i - \overline{X}}{\sigma}$$

The standard score is a transformation of raw scores for comparison purposes.   It is commonly used in examinations for assessing a student's ranking among a group of students.

Consider the marks in Mathematics and English of a class with ten students :

<u>Scores</u>

Student	Mathematics	English
(1)	95	60
(2)	90	50
(3)	80	55
(4)	87	69
(5)	79	61
(6)	55	68
(7)	70	70
(8)	97	59
(9)	75	71
(10)	55	72

Student (4) scores 87 in Mathematics and 69 in English.   In order to understand this student's ranking among his / her fellow classmates, we can separately calculate his / her standard scores in the two subjects.

	Mathematics	English
Class mean ($\overline{X}$)	78.3	63.5
Class standard deviation (σ)	14.2	7.2
Student (4)'s standard score (Z)	$\dfrac{87 - 78.3}{14.2}$	$\dfrac{69 - 63.5}{7.2}$
	$= \underline{0.61}$	$= \underline{0.76}$

Comparing his / her original score in each subject with the respective class mean score, we may already observe that he / she is doing better than the average in both subjects.   If supplemented by the standard scores, we may further observe that he / she stands relatively better in English (better than the mean score by 0.76 standard deviation) among his / her classmates than he / she does in regard to Mathematics (only better than the mean score by 0.61 standard deviation).

9 Measures of dispersion

Example 2 : Standard deviation as an indication of precision

Two balances, A and B, are used for measuring the weight of a piece of baggage of about 100 kg, each for 20 times.

There may be the thinking that a balance should always give the same reading in respect of the weight of the baggage no matter how many times weighing is done. In fact, this is not the case in reality as illustrated by the experiment below :

| | Balance readings (kg) | |
Balance measurement	Balance A	Balance B
1	100.3	100.3
2	100.3	100.2
3	100.0	99.7
4	99.8	100.1
5	99.7	99.8
6	100.3	100.2
7	100.1	100.2
8	99.6	99.9
9	100.2	100.4
10	100.3	100.3
11	100.2	100.0
12	99.6	100.3
13	100.4	100.2
14	99.6	99.8
15	99.7	99.9
16	100.3	100.1
17	100.0	100.4
18	99.6	100.1
19	100.4	100.2
20	99.6	99.9
Mean	100.0	100.1
Standard deviation	0.3	0.2

Balance A gives a standard deviation of 0.3 kg while Balance B gives a standard deviation of 0.2 kg.   Which balance is more "precise"?

The answer is Balance B because its measurements have a smaller standard deviation. (*It should, however, be noted that we are actually not sure whether Balance B or Balance A measures weight more accurately (i.e. we do not know whether the weight of the baggage is actually closer to 100.0 kg or 100.1 kg).*)

9 Measures of dispersion

References

A.S.C. Ehrenberg, *A Primer in Data Reduction*, Chapter 2, John Wiley & Sons Ltd., 2007.

Croxton, Frederick E., *Applied General Statistics*, P. 189-198, Prentice-Hall, 2011.

Spiegel, Murray R and Stephens, Larry J., *Schaum's outline of Theory and Problems of Statistics*, Chapter 4, Schaum Publishing Co., 2008.

The English Universities Press Limited, *Introduction to Management Statistics*, 1971.

Interactive quiz

You may test the knowledge you have learnt in this Chapter by trying this interactive quiz.   Answers to the questions can be found in the relevant paragraphs of this Chapter.

9 Measures of dispersion

Exercise

Measures of dispersion

1. The mean deviation of $\{\,2, 5, 13, 28\,\}$ is

☐ 0

☐ 8.5

☐ 12

☐ 34

Application of standard score

2. The following are the examination marks of a class of ten students. Comparing their total standard scores, which student in the class would you consider to have attained the best overall result?

Examination scores

Student	English	Chinese	Mathematics
(1)	40	62	80
(2)	57	60	60
(3)	60	70	95
(4)	48	64	92
(5)	53	66	75
(6)	66	72	78
(7)	72	70	86
(8)	49	67	87
(9)	69	60	99
(10)	70	74	83

9 Measures of dispersion

Student	Examination scores			Standard examination scores			
	English	Chinese	Mathematics	English	Chinese	Mathematics	Total
(1)	40	62	80				
(2)	57	60	60				
(3)	60	70	95				
(4)	48	64	92				
(5)	53	66	75				
(6)	66	72	78				
(7)	72	70	86				
(8)	49	67	87				
(9)	69	60	99				
(10)	70	74	83				
Mean							
Standard deviation							

The student in the class who has attained the best overall result is _____.

Solutions to exercises

Chapter 1   Population size and growth

(1)   From the data given below, complete the table.
(Figures given in thousands; rates expressed in "per 1 000 population".)

Country	Mid-year population at year T	No. of births in year T	No. of deaths in year T	Crude birth rate	Crude death rate	Rate of natural increase
Country A	29 863	1 322	525	**44.3**	**17.6**	**26.7**
Country B	15 941	723	332	**45.4**	**20.8**	**24.5**
Country C	20 155	249	132	**12.4**	**6.5**	**5.8**
Country D	32 268	332	226	**10.3**	**7.0**	**3.3**
Country E	9 749	433	181	**44.4**	**18.6**	**25.8**
Country F	1 315 844	17 558	8 795	**13.3**	**6.7**	**6.7**
Country G	74 033	1 860	421	**25.1**	**5.7**	**19.4**
Country H	1 517	51	17	**33.6**	**11.2**	**22.4**
Country I	82 689	702	853	**8.5**	**10.3**	**-1.8**
Country J	10 098	96	132	**9.5**	**13.1**	**-3.6**

(2)   From the rates obtained in part (1), classify the countries into various stages of the demographic transition model.

Stage (1) (High birth and death rates)	Stage (4) (Low birth and death rates)
Country A	*Country C*
Country B	*Country D*
Country E	*Country F*
	Country I
	Country J

Solutions to exercises

Chapter 2   Population structure

(1)   Population pyramids (in percentage) of the 18 districts in Hong Kong, June 2021
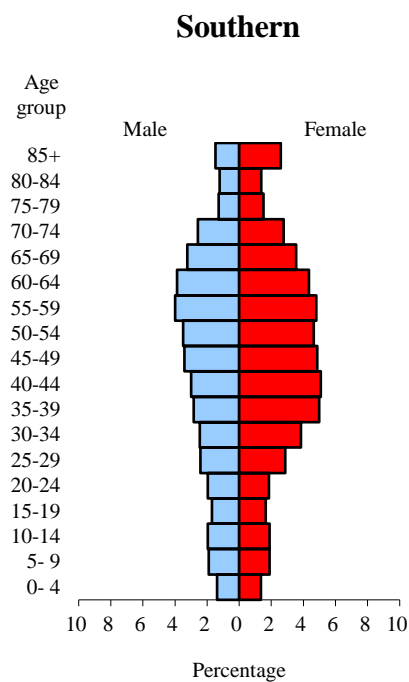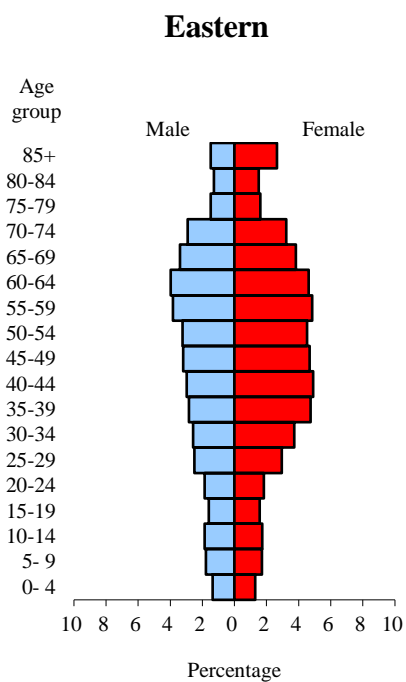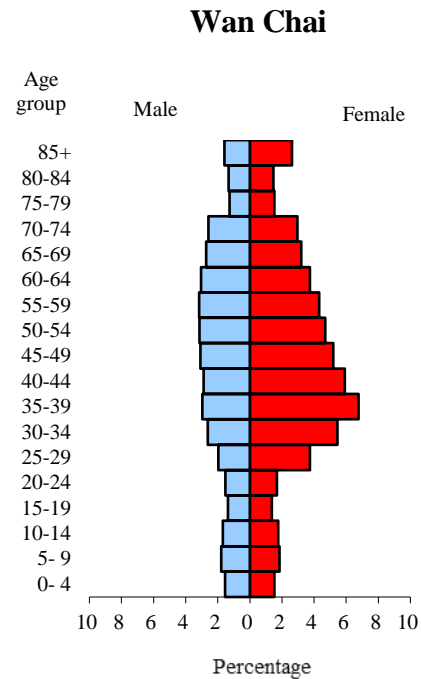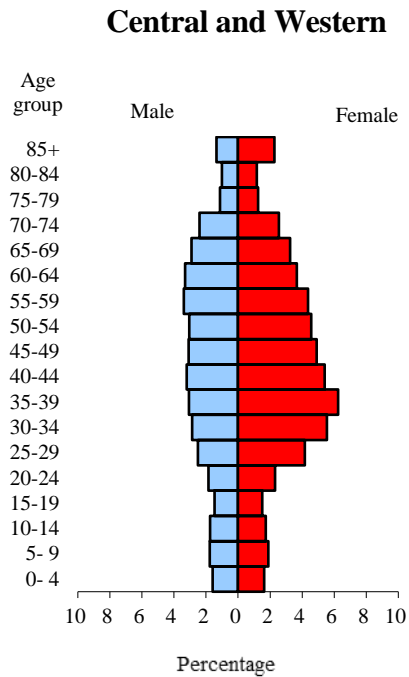
Central and Western

Wan Chai

Eastern

Southern

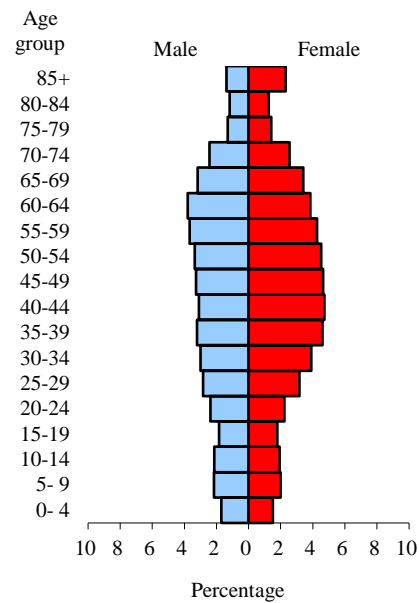# Solutions to exercises

(1)   Population pyramids (in percentage) of the 18 districts in Hong Kong, June 2021 (cont'd)
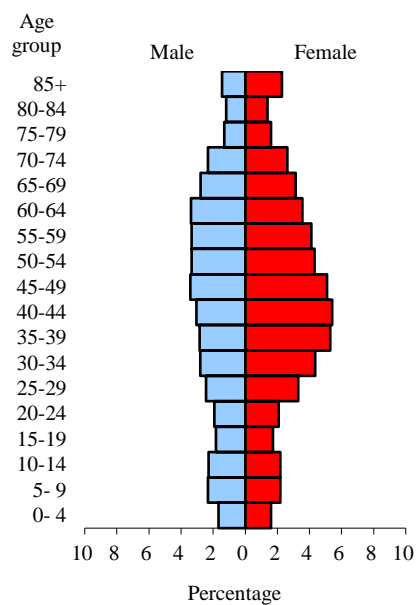

Yau Tsim Mong
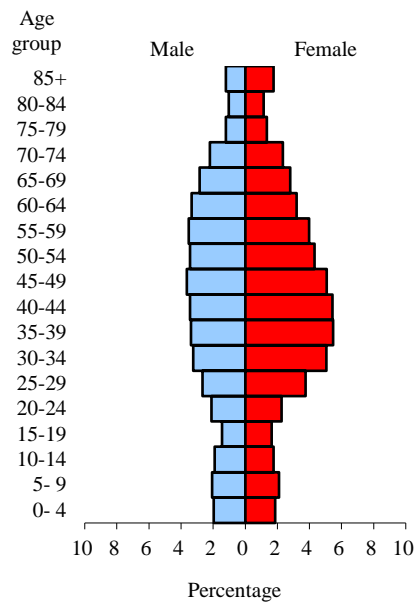
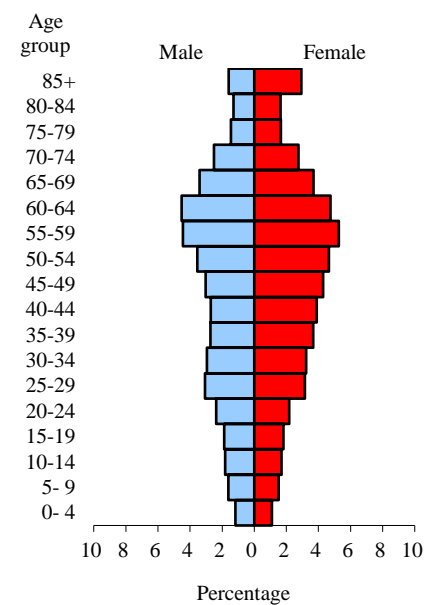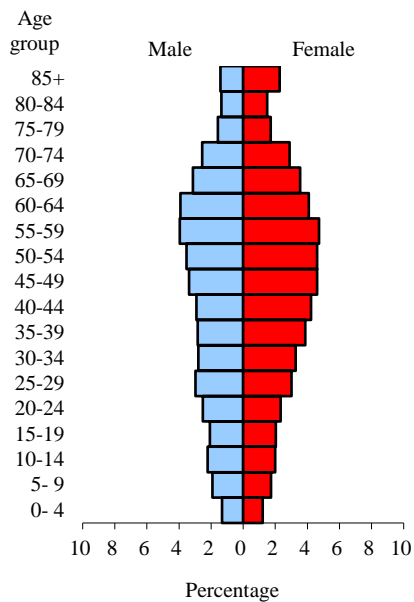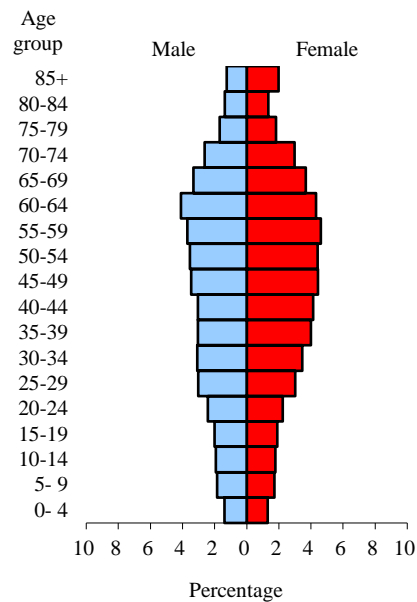Sham Shui Po

Kowloon City

Wong Tai Sin

Solutions to exercises

(1)   Population pyramids (in percentage) of the 18 districts in Hong Kong,
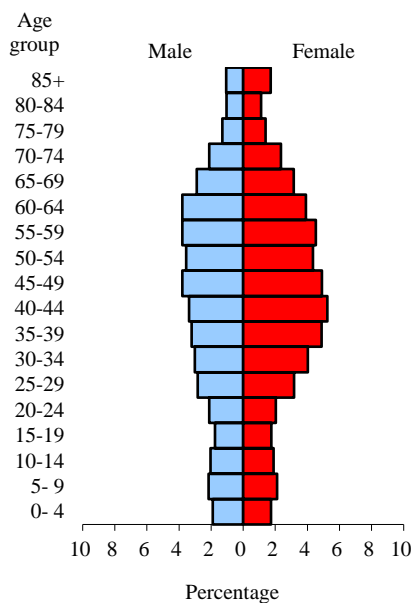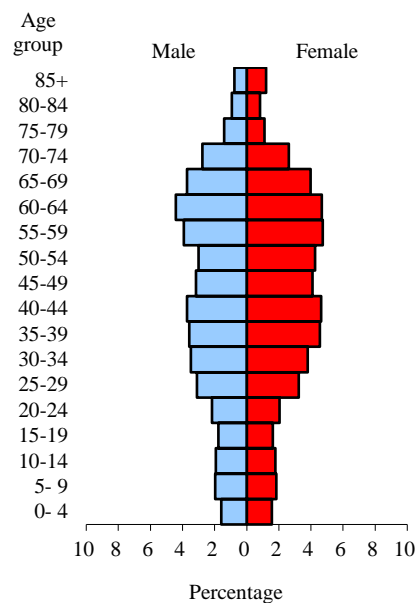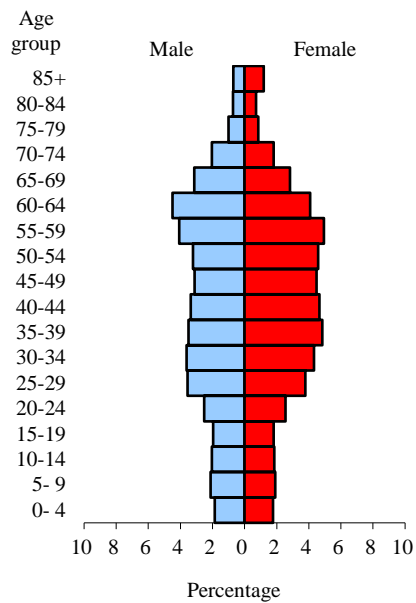   June 2021 (cont'd)

Kwun Tong

Kwai Tsing

Tsuen Wan

Tuen Mun

Solutions to exercises

(1)   Population pyramids (in percentage) of the 18 districts in Hong Kong, June 2021 (cont'd)

Yuen Long

North

Tai Po

Sha Tin

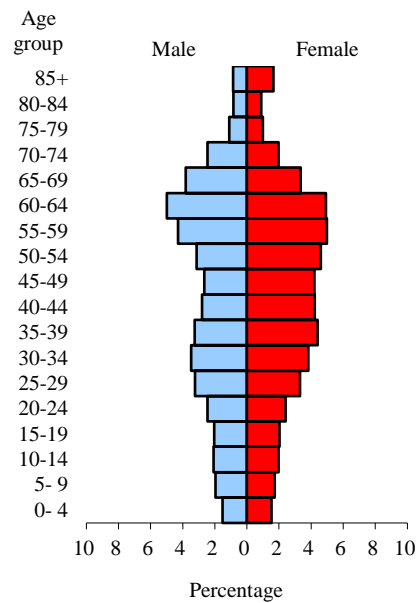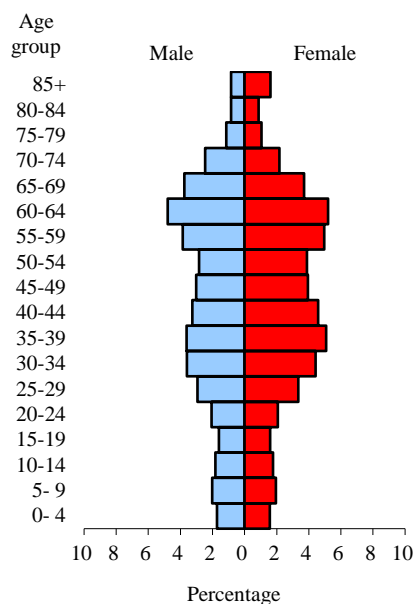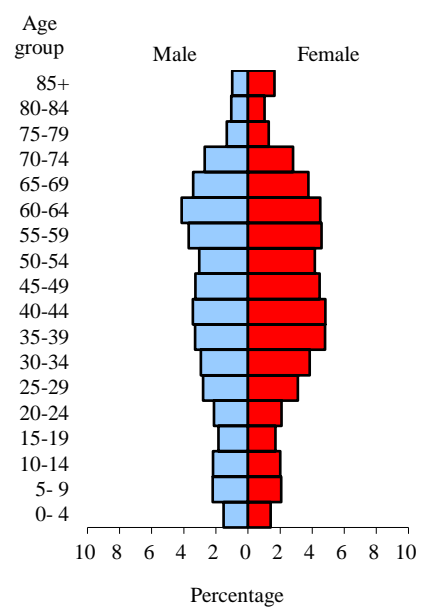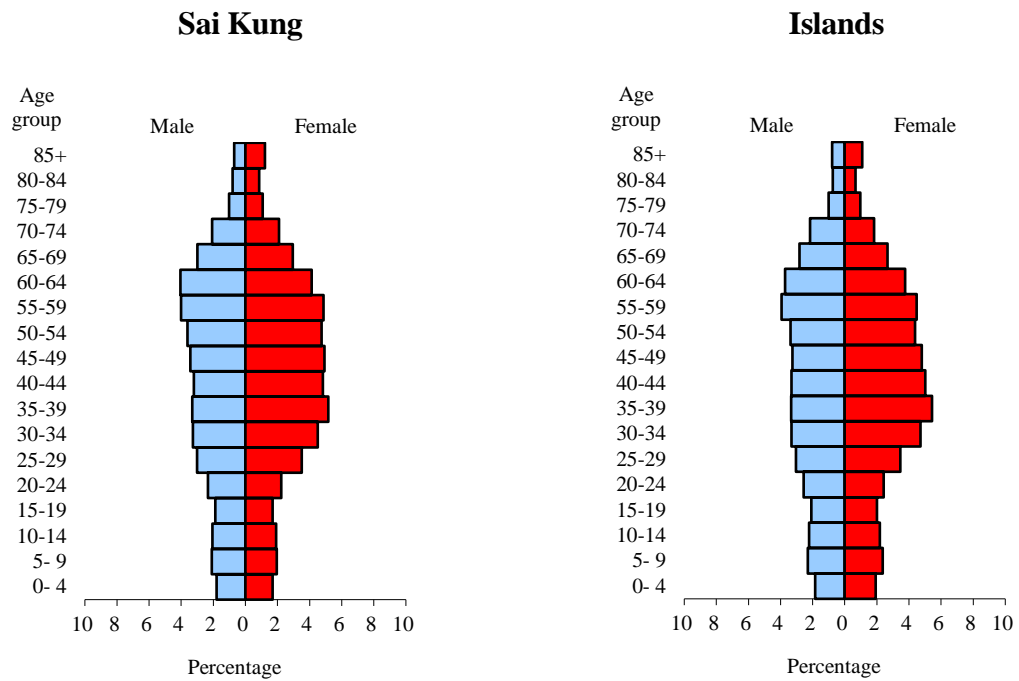# Solutions to exercises

(1)   Population pyramids (in percentage) of the 18 districts in Hong Kong,
      June 2021 (cont'd)

Solutions to exercises

(1)   Rank the ageing extent of these districts by comparing their median ages.

District Council district	Median age	Ranking for ageing extent [Note] ("1" for the most aged district)
Central and Western	44.8	14
Wan Chai	46.0	10
Eastern	49.0	2
Southern	48.1	3
Yau Tsim Mong	44.0	16
Sham Shui Po	46.2	7.5
Kowloon City	45.4	12.5
Wong Tai Sin	50.1	1
Kwun Tong	48.0	4.5
Kwai Tsing	48.0	4.5
Tsuen Wan	45.4	12.5
Tuen Mun	46.1	9
Yuen Long	43.7	17
North	46.3	6
Tai Po	45.7	11
Sha Tin	46.2	7.5
Sai Kung	44.7	15
Islands	42.7	18

Note : Where there are ties in rank, the tied observations are assigned the mean of the ranks which they jointly occupy.

Solutions to exercises

Chapter 4   Other official statistics

1. The population of Hong Kong in mid-2024 was
    - ☐ 5.75 million
    - ☐ 6.50 million
    - ☑ 7.52 million
    - ☐ 7.24 million

2.   Crude birth rate in Hong Kong

Year	(Number of births per 1 000 population)
2015	8.2
2024	x

    $x =$
    - ☐ 7.6
    - ☑ 4.9
    - ☐ 9.3
    - ☐ 9.8

3. If the crude death rate in a given year was 5.0 deaths per 1 000 population and the crude birth rate was 7.2 births per 1 000 population, the rate of natural increase per 1 000 population in the period was
    - ☐ -2.4
    - ☑   2.2
    - ☐ -12.0
    - ☐   12.0

4. Most of the visitors visiting Hong Kong in 2024 came from
    - ☐ United States of America
    - ☐ Japan
    - ☑ The Mainland
    - ☐ Europe

5. The population in mid-2019 = a; and
    the population in mid-2024 = b.
    The compound average growth rate per annum of the population in this period
    was

    - □ $\left(\sqrt[4]{\dfrac{b}{a}}-1\right)\times 100\%$

    - □ $\dfrac{\left(\dfrac{b}{a}-1\right)}{4}\times 100\%$

    - ☑ $\left(\sqrt[5]{\dfrac{b}{a}}-1\right)\times 100\%$

    - □ $\dfrac{\left(\dfrac{b}{a}-1\right)}{5}\times 100\%$

6. In 2024, the size of the labour force in Hong Kong was
    - □ 3.78 million
    - □ 3.88 million
    - □ 3.95 million
    - ☑ 3.81 million

7. Which category of persons is regarded as economically inactive?
    - □ Unpaid family workers
    - □ Employers
    - □ The unemployed
    - ☑ Full-time home-makers

8. Which of the following is not an approach in the compilation of the Gross
    Domestic Product?
    - □ Expenditure approach
    - □ Production approach
    - ☑ Industrial approach

Solutions to exercises

Chapter 6   Uses and misuses of statistics

1. A person actually received $80,000 in cash from Bank Y and he had to repay $100,000 on the 16th day.   Therefore the interest rate should be

$$\frac{\$20,000}{\$80,000} \times 100\% = 25\%$$
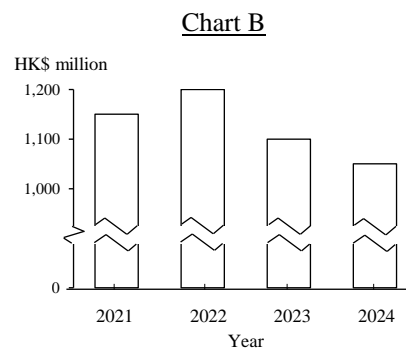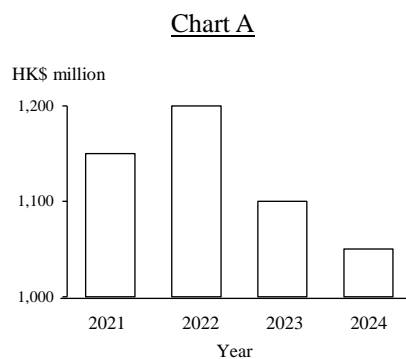
or 25% per 15 days.

2. The price of an article A was $100 in 2023 and $50 in 2024.   This means that the price of A in the period has decreased by
    - ☑   50%
    - ☐   100%
    - ☐   150%
    - ☐   200%

3. Which one of the following charts is visually distorted and should not be used?
    - ☑   Chart A
    - ☐   Chart B

Chart A

Chart B

Living with Statistics

Chapter 7 Rate, ratio, proportion and percentage

(i) 841 927 / 7 432 500 is just the proportion of the number of students passing the examination to the total population, irrespective of whether they had taken the examination. The accurate measure of the overall passing rate is 841 927 / 1 403 211, i.e. only those students who had taken the examination should be counted in the base used for comparison.

(ii) The passing rates for the four districts on Hong Kong Island should be

Central and Western district	$=$	$(44\ 014\ /\ 60\ 293) \times 100\%$	$=$ 73%
Wan Chai district	$=$	$(28\ 366\ /\ 41\ 110) \times 100\%$	$=$ 69%
Eastern district	$=$	$(93\ 943\ /\ 144\ 528) \times 100\%$	$=$ 65%
Southern district	$=$	$(44\ 831\ /\ 63\ 142) \times 100\%$	$=$ 71%

The overall passing rate for Hong Kong Island should be

$$\frac{(44\ 014 + 28\ 366 + 93\ 943 + 44\ 831)}{(60\ 293 + 41\ 110 + 144\ 528 + 63\ 142)} \times 100\% = \underline{\underline{68\%}}$$

(iii) As the increase in the number of students passing the examination might be due to the fact that there were more students in Wan Chai sitting for the examination in 2024, the comparison for the two years should therefore be based on the passing rate for the district in the two respective years.

As we only have limited information (data for two years only, viz. 2019 and 2024), it is difficult for us to draw the conclusion that the academic results of students in Wan Chai had improved during the period from 2019 and 2024. Maybe, the results in years 2019 and 2024 are outliers in the data series.

Solutions to exercises

1. Consider a set of figures：

    { 1, 9, 3, 7, 8, 12, 9 }

    (i)   What is the sum of these seven values?   **[49]**

    (ii)   What is the mean?   **[7]**

    Note：
    ➢   **Mean = Sum of the figures ÷ Number of data points**
    ➢   **Sum of the figures = Mean × Number of data points**

    (iii)   What is the median?   **[8]**

    (iv)   What is the mode?   **[9]**

    (v)   Is the median equal to the mean of the same seven values?   **[No]**

    (vi)   Are the mean and median the same when the set of figures is
            { 1, 3, 7, 11, 13 } ?
            [Yes; Mean = Median = 7]

    (vii)   When the mean and median are the same, what does this suggest?
            **[When the set of data is symmetrical, the mean and median will be the
            same.   However, having the same mean and median, the set of data is
            not necessarily symmetrical.   For example, in the set of figures   { 1, 7,
            9, 13, 15 } , although both the mean and median are equal (= 9), the set
            of data is not symmetrical.]**

2. The mean of   { 10, 20, 30, 40, 50 }   is
    ☑   30
    ☐   35
    ☐   40
    ☐   45

3. The mode of   { 3, 10, 13, 24, 29, 30, 31 }   is
    ☐   20
    ☐   24
    ☐   31
    ☑   Mode does not exist in this set of figures

4. When half of the elements of a population are smaller than a value *X* and half are greater than it, *X* is the
    ☐ Mean
    ☑ Median
    ☐ Mode

5. Among mean, median and mode, which one is the most easily affected by extreme values?
    ☑ Mean
    ☐ Median
    ☐ Mode

Solutions to exercises

Chapter 9   Measures of dispersion

1. The mean deviation of $\{2, 5, 13, 28\}$ is
   - ☐ 0
   - ☑ 8.5
   - ☐ 12
   - ☐ 34

2.

Student	Examination scores			Standard examination scores			
	English	Chinese	Mathematics	English	Chinese	Mathematics	Total
(1)	40	62	80	-1.8	-1.0	-0.3	-3.1
(2)	57	60	60	-0.1	-1.4	-2.2	-3.7
(3)	60	70	95	0.2	0.7	1.1	2.0
(4)	48	64	92	-1.0	-0.5	0.8	-0.7
(5)	53	66	75	-0.5	-0.1	-0.8	-1.4
(6)	66	72	78	0.7	1.2	-0.5	1.4
(7)	72	70	86	1.3	0.7	0.2	2.3
(8)	49	67	87	-0.9	0.1	0.3	-0.5
(9)	69	60	99	1.0	-1.4	1.5	1.1
(10)	70	74	83	1.1	1.6	0.0	2.7
Mean	58.4	66.5	83.5				
Standard deviation	10.3	4.7	10.6				

The student in the class who has attained the best overall result is   **(10)**   .
(Reason: Student (10) got the highest total standard score.)

Enquiries on Statistical Data

The following are telephone numbers, fax numbers and e-mail addresses for enquiries about various statistical data compiled by the Census and Statistics Department.   In case more detailed information is needed, enquiries will be referred to the subject officers concerned.

Statistical Data	Tel No.	Fax No.	E-mail Address
► 2021 Population Census	3903 6944	2716 0231	census@censtatd.gov.hk
► Merchandise trade statistics	2582 4915	2802 1101	trade@censtatd.gov.hk
► Trade in services and offshore trade statistics	3903 7415	2121 8296	tis@censtatd.gov.hk
► Port cargo and containers statistics	2582 2126	2802 1192	shipping@censtatd.gov.hk
► Consumer Price Indices	3903 7374	2577 6253	cpi@censtatd.gov.hk
► Household expenditure statistics	3903 7384	2127 4698	hes@censtatd.gov.hk
► Labour force, employment and unemployment statistics	2887 5508	2508 1501	ghs@censtatd.gov.hk
► Persons engaged and job vacancies in establishments statistics	2582 5076	2827 2296	employment@censtatd.gov.hk
► Wage and labour earnings statistics	2887 5550	3579 2070	wage@censtatd.gov.hk
► National income statistics			
• Gross Domestic Product (by expenditure component)	2582 5077	2157 9295	gdp-e@censtatd.gov.hk
• Gross Domestic Product (by economic activity)	3903 7005	3902 3045	gdp-p@censtatd.gov.hk
• Gross National Income	3903 7054	2116 0370	gni@censtatd.gov.hk
► Balance of Payments statistics	3903 6981	2116 0278	bop@censtatd.gov.hk
► Economic statistics (by industry)	3903 7267	2123 1053	econ-survey@censtatd.gov.hk
► Population statistics	3903 6943	2716 0231	population@censtatd.gov.hk
► Social statistics	2887 5508	2508 1501	social@censtatd.gov.hk
► Other statistics	2582 5073	2827 1708	gen-enquiry@censtatd.gov.hk
► Statistical publications	2582 3025	2827 1708	gen-enquiry@censtatd.gov.hk