

Synopsis of Healthcare Financing Studies

Projection of Hong Kong's Healthcare Expenditure

Objective

The objective of the study is to project the public and private health expenditures in Hong Kong up to year 2033. The Food and Health Bureau has commissioned the Department of Community Medicine and School of Public Health, Li Ka Shing Faculty of Medicine, The University of Hong Kong to conduct this study.

Methodology

2. The health expenditure projection is conducted based on an adaptation of the United Kingdom Treasury's Wanless projection method¹. This method requires health expenditure to be broken down by age, sex, unit cost, and activity level (i.e. volume in terms of healthcare utilization). The population is divided into 36 age-sex subgroups: (0-4, male); ...; (85+, male); (0-4, female); ...; (85+, female). Activity levels are defined as per capita bed-day for in-patient care and number of visit per capita for out-patient care. Since some expenditure items are either non-specific to age-sex groups (e.g. public health programme) or lacking age-sex-specific utilization breakdown (e.g. pharmaceuticals), they are defined as 'per capita other health expenditure' in the model. Baseline unit costs and per capita other health expenditure are derived from the latest set of Hong Kong's Domestic Health Accounts (DHA) which is updated to the reference year 2004.

3. The projection takes into account medical inflation and changes in the utilization of healthcare services as a result of demographic changes, and the basic steps are as follows:

- (a) Projection of age-sex profiles up to year 2033 to account for demographic changes, which include population growth and population ageing;
- (b) Projection of activity levels with demographic changes incorporated to account for changes in the age-sex-specific utilization of different types of healthcare over future years. The projection is based on the

¹ Wanless D. Securing our Future Health: Taking a Long-Term View - Final Report. The Public Enquiry Unit, HM Treasury, UK Government. 2002. Available at <http://www.hm-treasury.gov.uk/wanless>

assumption that age-sex-specific utilization pattern of healthcare and the standard of care remain constant at the baseline level (that is at year 2004 level); however, we account for an excess growth in per capita volume of services delivered, at 0.2% per year, in accordance with local and international experience;

- (c) Projection of unit costs taking into consideration per capita Gross Domestic Product (GDP) growth and medical price increase, which would have incorporated the impact of certain key drivers of health expenditure such as the adoption of ever advancing technology and potential productivity gains; and
- (d) Finally, the projected activity levels are multiplied by the projected unit costs, to obtain total health expenditure projections.

4. Rising medical costs due to advances in medical technology and public expectations for healthcare to keep up with such advances is known as medical inflation. Net medical inflation refers to medical inflation over and above per capita GDP growth and comprises two components: (i) medical price increase (see paragraph 3 (c)), and (ii) per capita volume growth (see paragraph 3 (b)), according to Huber's review of health expenditure among Organisation for Economic Co-operation and Development (OECD) countries in 1999². In our study, net medical inflation is assumed to be 0.8% for public health expenditure and 1.6% for private health expenditure, in addition to a standard 0.2% per capita volume growth per year, based on international experience and past trend of Hong Kong's health expenditure data. Thus the public sector net medical inflation approximated the OECD average that was documented in a 2006 review. The review showed that after controlling for demographic effects, public health expenditures of OECD countries generally grew 1% per annum faster than income over the past two decades³. The review also indicated that advances in medical technology and relative price movement in the supply of health services were the main factors for the residual growth irrespective of demographic and income effects. For example, new technologies may increase demand by increasing the variety and quality of products.

5. Data sources for the study include Population Projections 2004-2033 published by the Census and Statistics Department (C&SD), health expenditure

² Huber M. Health expenditure trends in OECD countries. *Health Care Financial Review* 1999; 21:99-117.

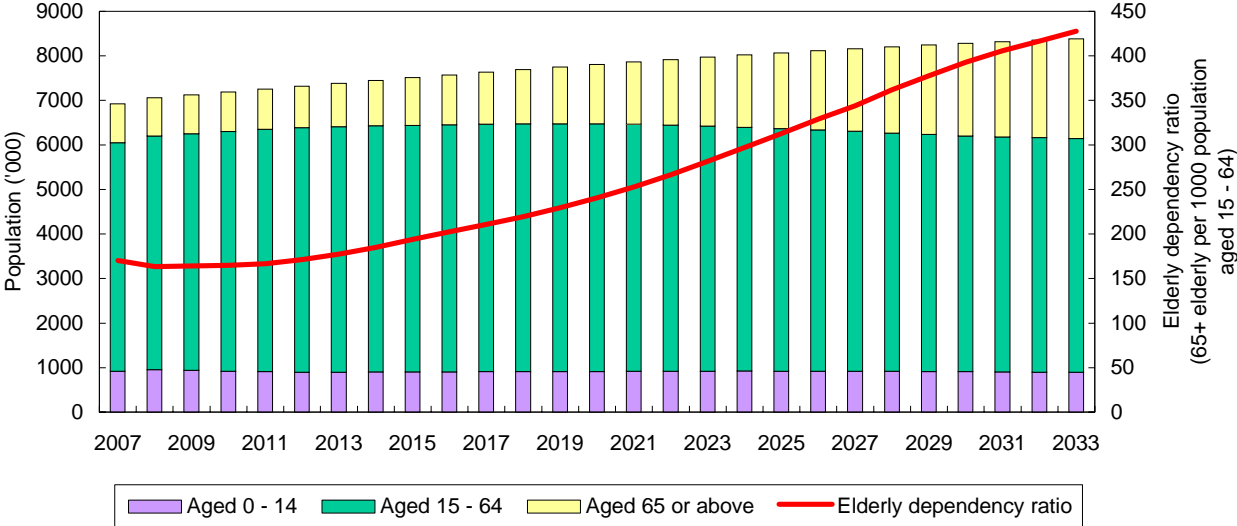
³ Organisation for Economic Co-operation and Development. *Projecting OECD health and long-term care expenditures: what are the main drivers?* OECD Economics Department working paper no. 477; 2006.

data derived from Hong Kong’s DHA 1989/90-2004/05, health service utilization data provided by the Hospital Authority, the Department of Health and estimated from Thematic Household Surveys 2002 and 2005 conducted by C&SD, and working assumptions on GDP growth from 2006 to 2033 provided by Government Economist for the purpose of this study.

Projected Population

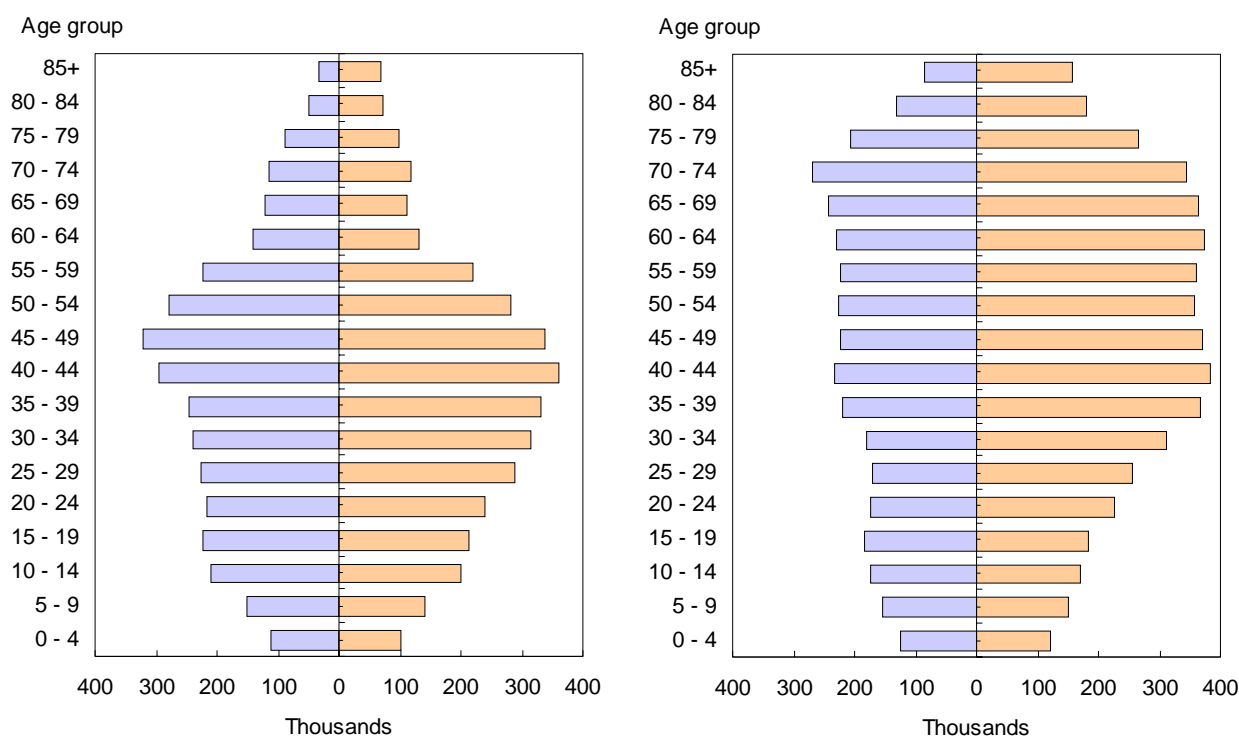
6. According to the 2003-based population projection, the size of Hong Kong’s population will increase to 8.4 million by 2033 from the current 6.9 million. In particular, the number of elderly people aged 65 or above, which currently accounts for 12.6% of the total population, will reach some 2.2 million by then, constituting 26.8% of our population. In other words, the ratio of elderly people to total population in our community will double from 1 in 8 in 2007 to 1 in 4 by 2033. The projected numbers of total population and elderly population are summarized in Figure 1. The respective population pyramid for 2007 and 2033 are presented in Figure 2.

Figure 1. Projected total population and elderly population, 2007-2033



Source: Hong Kong Population Projections 2004 – 2033, Census and Statistics Department.

Figure 2. Population Pyramid, 2007 and 2033

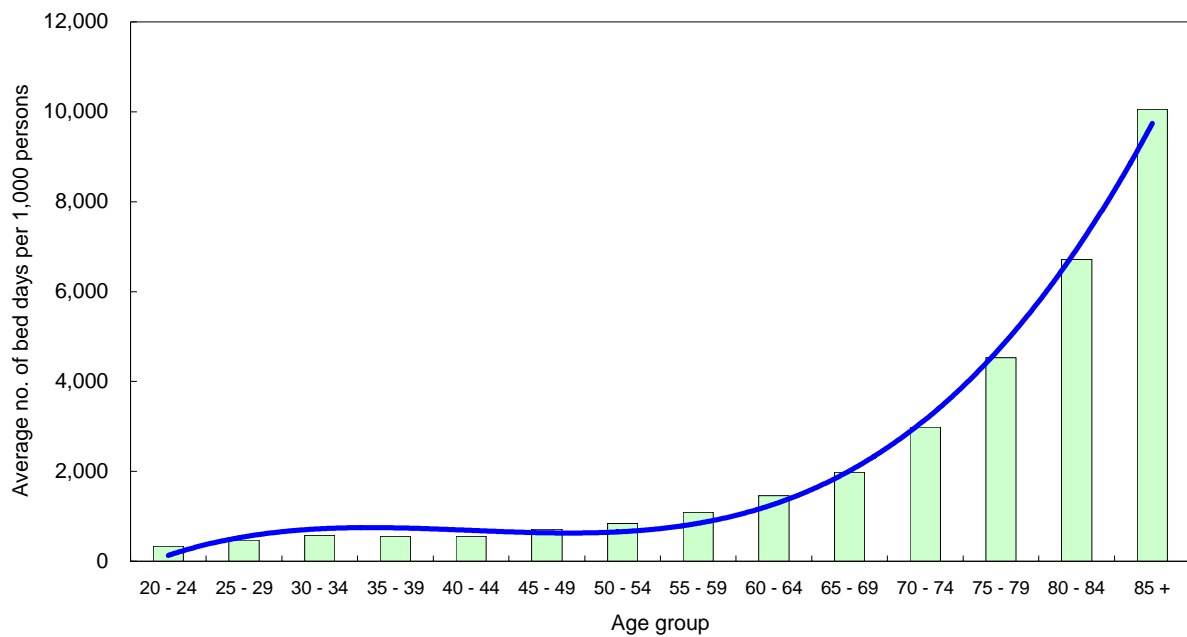


Source: Hong Kong Population Projections 2004 – 2033, Census and Statistics Department.

Healthcare Utilization

7. Healthcare utilization is projected to increase due to the expansion of population and in particular, the rising share of elderly people in the population. This is due to the fact that elderly people have greater healthcare needs than others, which is why there is a tendency for health expenditure per capita to increase with age. For example, based on the utilization data of public hospital services in 2005-06, it is estimated that a person aged 65 or above occupies on average six times more hospital bed days than a person aged below 65 (see Figure 3). Therefore, compared to population growth, population ageing is a more important contributing factor for the projected growth in healthcare utilization.

Figure 3. Average number of public hospital bed days by age (2006)



Source: Data from Hospital Authority.

Projected Health Expenditure

8. It is estimated that over the projection period of 2004-2033, total health expenditure will increase by 55% at an average annual growth rate of 1.5% due solely to the demographic effects (changes arising from age composition and population size) on healthcare utilization.

9. If medical inflation and per capita GDP growth are also taken into consideration in addition to demographic effects, the total health expenditure is expected to increase by 365% from \$67.8 billion in 2004 to \$315.2 billion in 2033 at 2005 price level. This represents an average annual growth rate of 5.4% in real terms at an annualized rate of 1.9 percentage points over and above GDP growth between 2004 and 2033. At this rate, the total health expenditure as a share of GDP would increase from 5.3% in 2004 to 9.2% in 2033. The projected health expenditures are presented in Table 1 and graphically illustrated in Figure 4, whereas the projected health expenditures as percentage of GDP are graphically illustrated in Figure 5.

10. In per capita terms, total health expenditure per capita will increase by 276% in real terms from \$10,000 to \$37,600 between 2004 and 2033. Public health expenditure per capita will increase even faster by 298% in real terms from \$5,600 to \$22,300 during the same period (Table 2).

11. It is expected that the public health expenditure would increase in real terms at an even faster rate than the total health expenditure (Figure 6), at an annualised rate of 2.2 percentage points over and above GDP growth. At this rate, public health expenditure as a share of GDP would increase from 2.9% in 2004 to 5.5% in 2033, and the actual expenditure is estimated to increase by 394% in real terms from \$37.8 billion to \$186.6 billion during the same period, which represents an average annual growth rate of 5.7%.

12. Public health expenditure accounted for 55.7% of the total health expenditure in 2004; its share is projected to increase to 59.2% by 2033. At present, government budget on health makes up about 14.7% of the total government budget. The projection results show that if we were to fund the projected public health expenditure entirely by public revenue as is the present financing arrangement, government budget on health would have to reach 27.3% of total government budget by 2033.

13. The projected growth rates of public health expenditure due to the respective effects of net medical inflation, population growth and population ageing are graphically illustrated in Figure 7.

Table 1. Projected health expenditures up to year 2033

In constant 2005 prices HK\$ Billion

Year	2004*	2010	2015	2020	2025	2030	2033
Public health expenditure	37.8	58.5	77.7	100.1	127.5	161.9	186.6
Private health expenditure	30.1	45.7	59.4	74.6	92.3	114.0	128.6
Total Health Expenditure (THE)	67.8	104.1	137.2	174.7	219.8	275.9	315.2
Public health expenditure per GDP	2.9%	3.3%	3.7%	4.1%	4.5%	5.1%	5.5%
Private health expenditure per GDP	2.3%	2.6%	2.8%	3.0%	3.3%	3.6%	3.8%
THE per GDP	5.3%	5.9%	6.5%	7.1%	7.8%	8.7%	9.2%
Public health expenditure per total government budget	14.7%	16.5%	18.3%	20.3%	22.6%	25.4%	27.3%

* Actual figures

Table 2. Projected per capita health expenditures up to year 2033

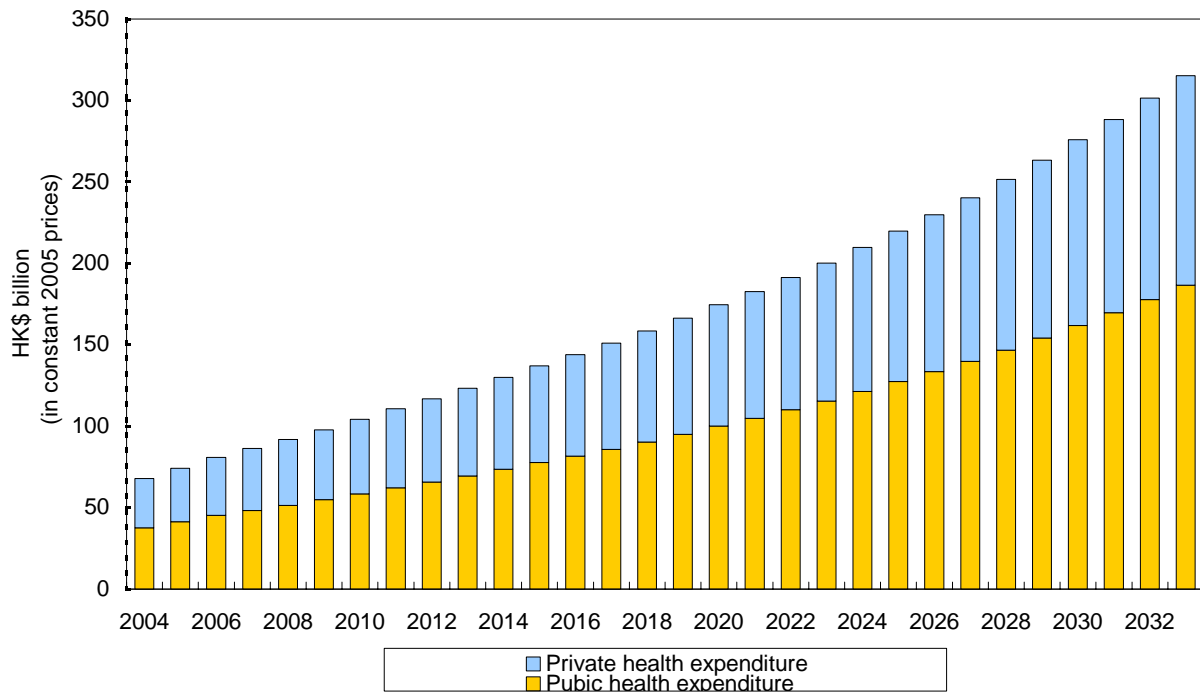
In constant 2005 prices HK\$

Year	2004*	2010	2015	2020	2025	2030	2033
Per capita public health expenditure	5,600	8,100	10,400	12,800	15,800	19,500	22,300
Per capita private health expenditure	4,400	6,400	7,900	9,600	11,400	13,800	15,300
Per capita total health expenditure	10,000	14,500	18,300	22,400	27,200	33,300	37,600

* Actual figures

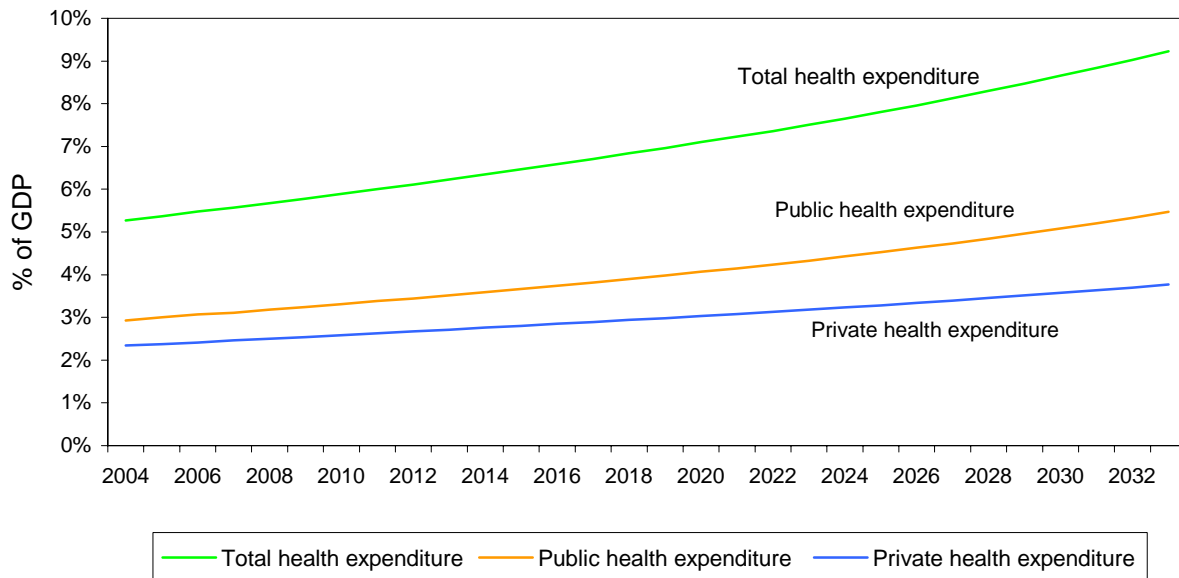
Note: Figures have been rounded to the nearest hundred

Figure 4. Projected public and private health expenditures up to year 2033



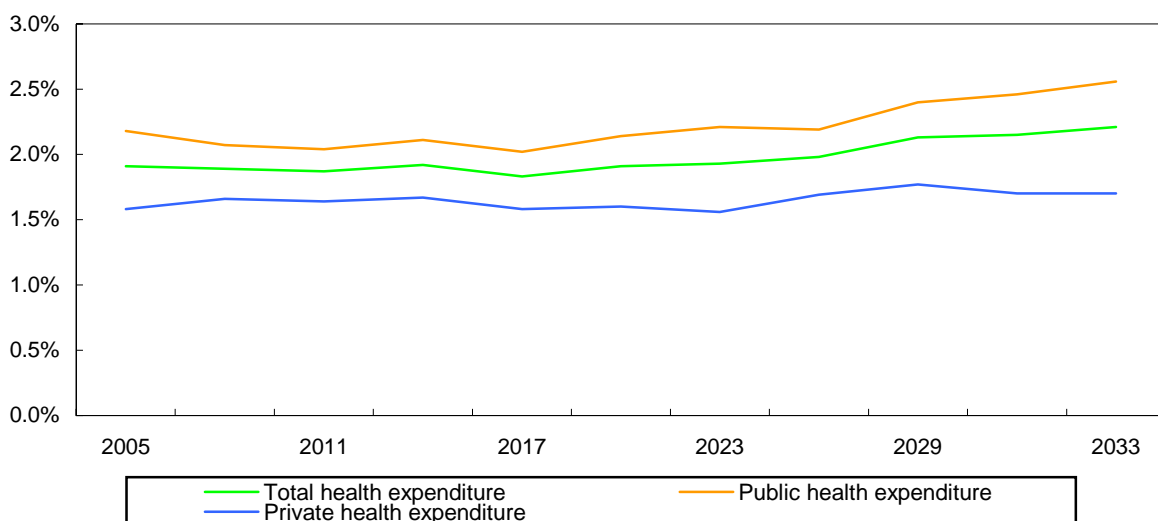
Source: Hong Kong's Domestic Health Accounts: Financial projection of Hong Kong's total expenditure on health from 2004 to 2033.

Figure 5. Projected growth of health expenditure (total, public, private) in percentage of GDP



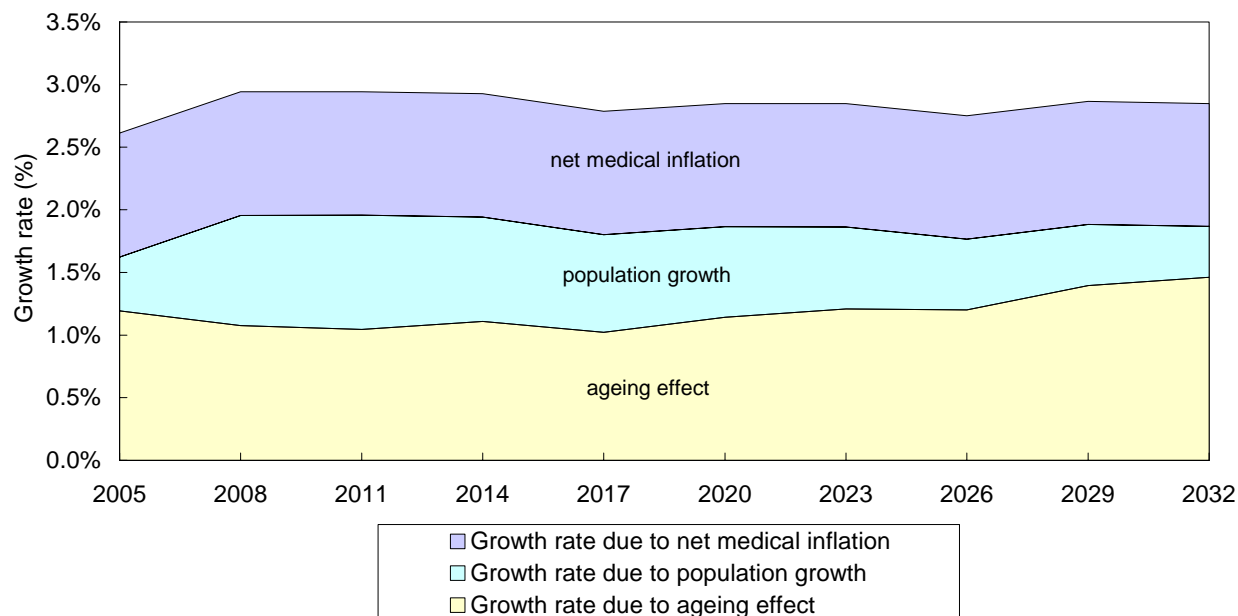
Source: Hong Kong's Domestic Health Accounts: Financial projection of Hong Kong's total expenditure on health from 2004 to 2033.

Figure 6. Rate of changes in projected growth of health expenditure (total, public, private) in percentage of GDP



Source: Hong Kong's Domestic Health Accounts: Financial projection of Hong Kong's total expenditure on health from 2004 to 2033.

Figure 7. Projected growth rate of public health expenditure (on top of per capita real GDP growth) due to net medical inflation, population growth and ageing effect



Source: Hong Kong's Domestic Health Accounts: Financial projection of Hong Kong's total expenditure on health from 2004 to 2033.

Food and Health Bureau
 Hong Kong Special Administrative Region Government
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