

Tuberculosis in Hong Kong

TB & Chest Service
Centre for Health Protection
Department of Health
Hong Kong SAR
China



Demographics & geography Hong Kong

- South of Mainland China
- Population = ~6,900,000
- Area = 1098 sq km
- Population density = ~6300 per sq km



全日開放的診所
Full-time Chest Clinics

1. 灣仔胸肺科診所
Wanchai Chest Clinic
2. 筲箕灣胸肺科診所
Shaukeiwan Chest Clinic
3. 西營盤胸肺科診所
Sai Ying Pun Chest Clinic
4. 九龍胸肺科診所
Kowloon Chest Clinic
5. 石硤尾胸肺科診所
Shek Kip Mei Chest Clinic
6. 油麻地胸肺科診所
Yau Ma Tei Chest Clinic
7. 南葵涌胸肺科診所
South Kwai Chung Chest Clinic
8. 東九龍胸肺科診所
East Kowloon Chest Clinic
9. 仁愛胸肺科診所
Yan Oi Chest Clinic
10. 容鳳書胸肺科診所
Yung Fung Shee Chest Clinic
11. 圓洲角胸肺科診所
Yuen Chau Kok Chest Clinic
12. 大埔胸肺科診所
Tai Po Chest Clinic

部份時間開放的診所
Part-time Chest Clinics

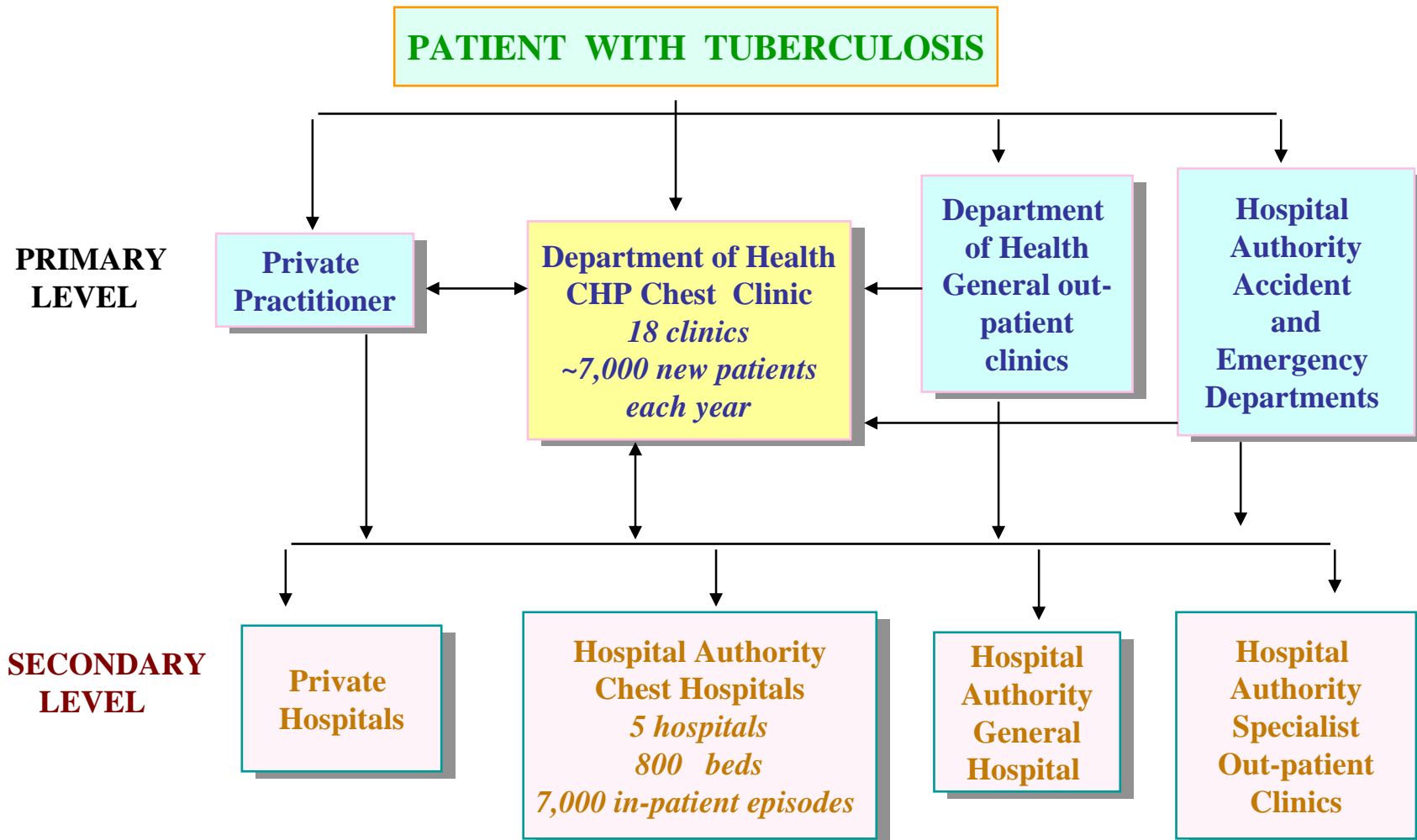
13. 上水胸肺科診所
Sheung Shui Chest Clinic
14. 元朗胸肺科診所
Yuen Long Chest Clinic
15. 西貢胸肺科診所
Sai Kung Chest Clinic
16. 長洲胸肺科診所
Cheung Chau Chest Clinic
17. 東涌胸肺科診所
Tung Chung Chest Clinic



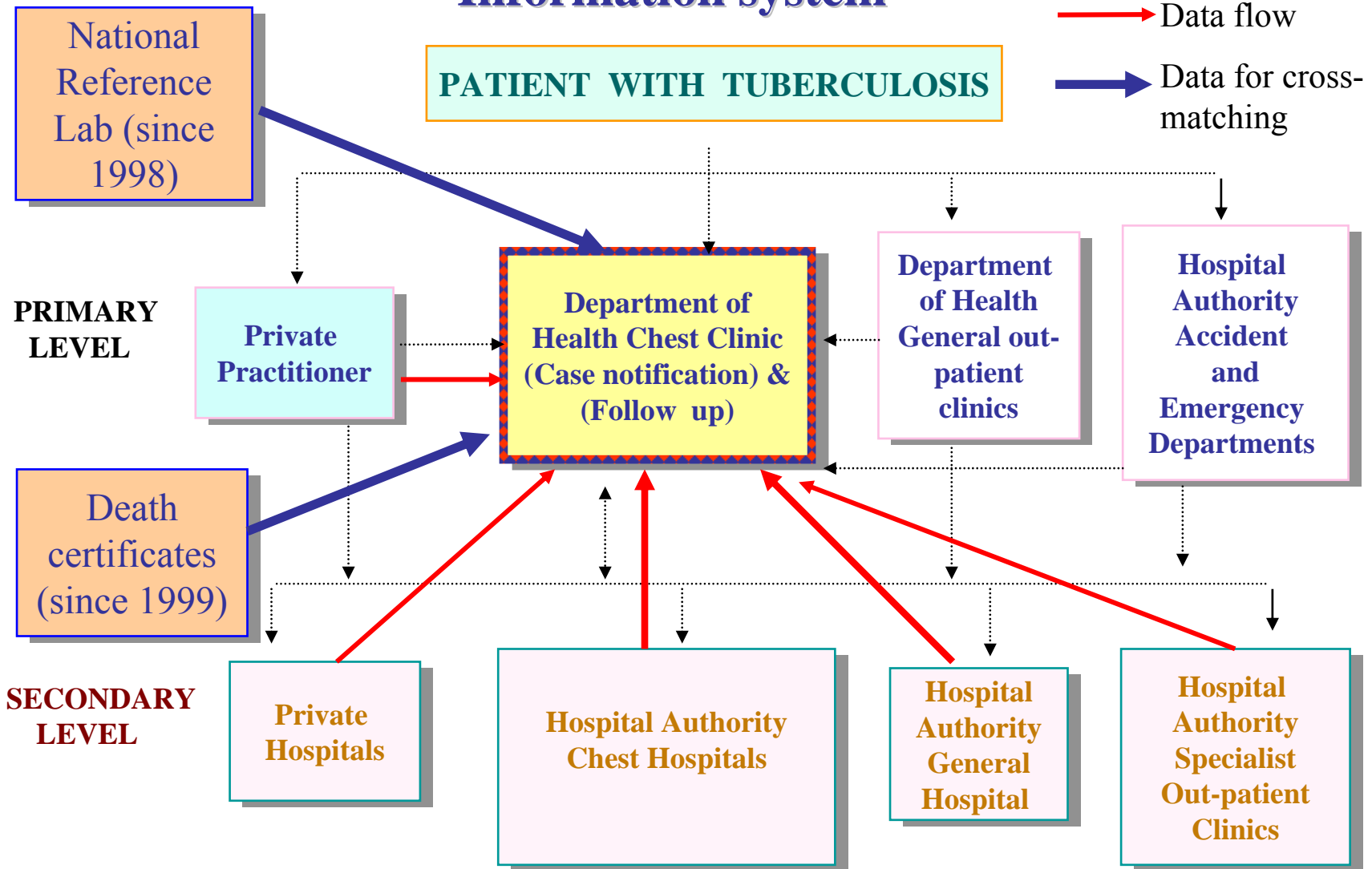
肺科醫院
Chest Hospitals

- A. 葛量洪醫院
Grantham Hospital
- B. 靈實醫院
Haven of Hope Hospital
- C. 九龍醫院
Kowloon Hospital
- D. 律敦治醫院
Ruttonjee Hospital
- E. 東華三院黃大仙醫院
TWGHs Wong Tai Sin Hospital

SOURCES OF CARE FOR PATIENTS WITH TUBERCULOSIS IN HONG KONG



Information system



➤ Data from TB laboratories and death certificates are cross matched with the TB notification registry to trace back under-notified cases.

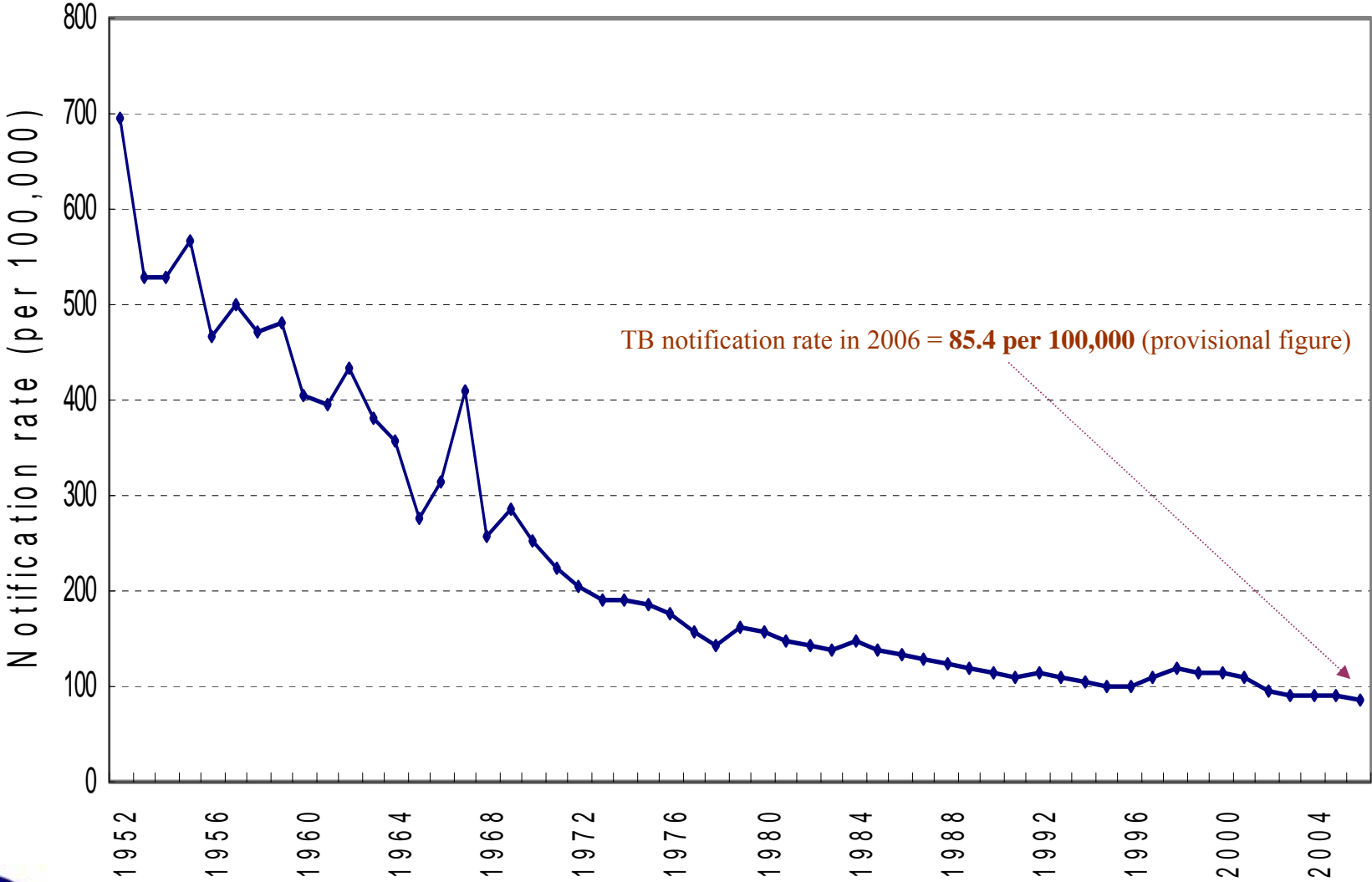


TB Control Measures

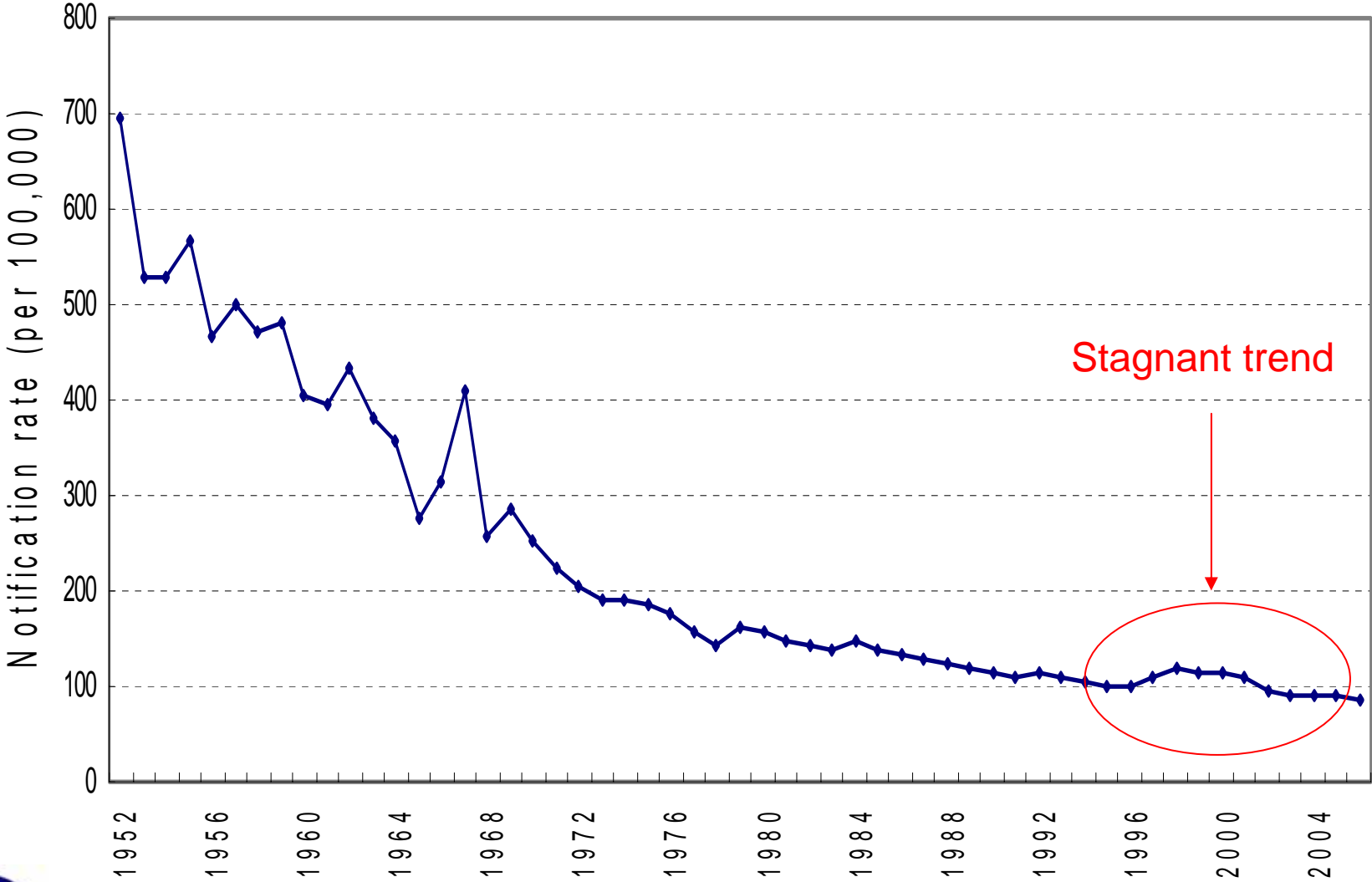
- Surveillance
- DOTS
- Case finding, contact examination and preventive measures
- Treatment of LTBI
- BCG
- Health education
- Research



TB notification in Hong Kong (1952 - 2006)



TB notification in Hong Kong (1952 - 2006)



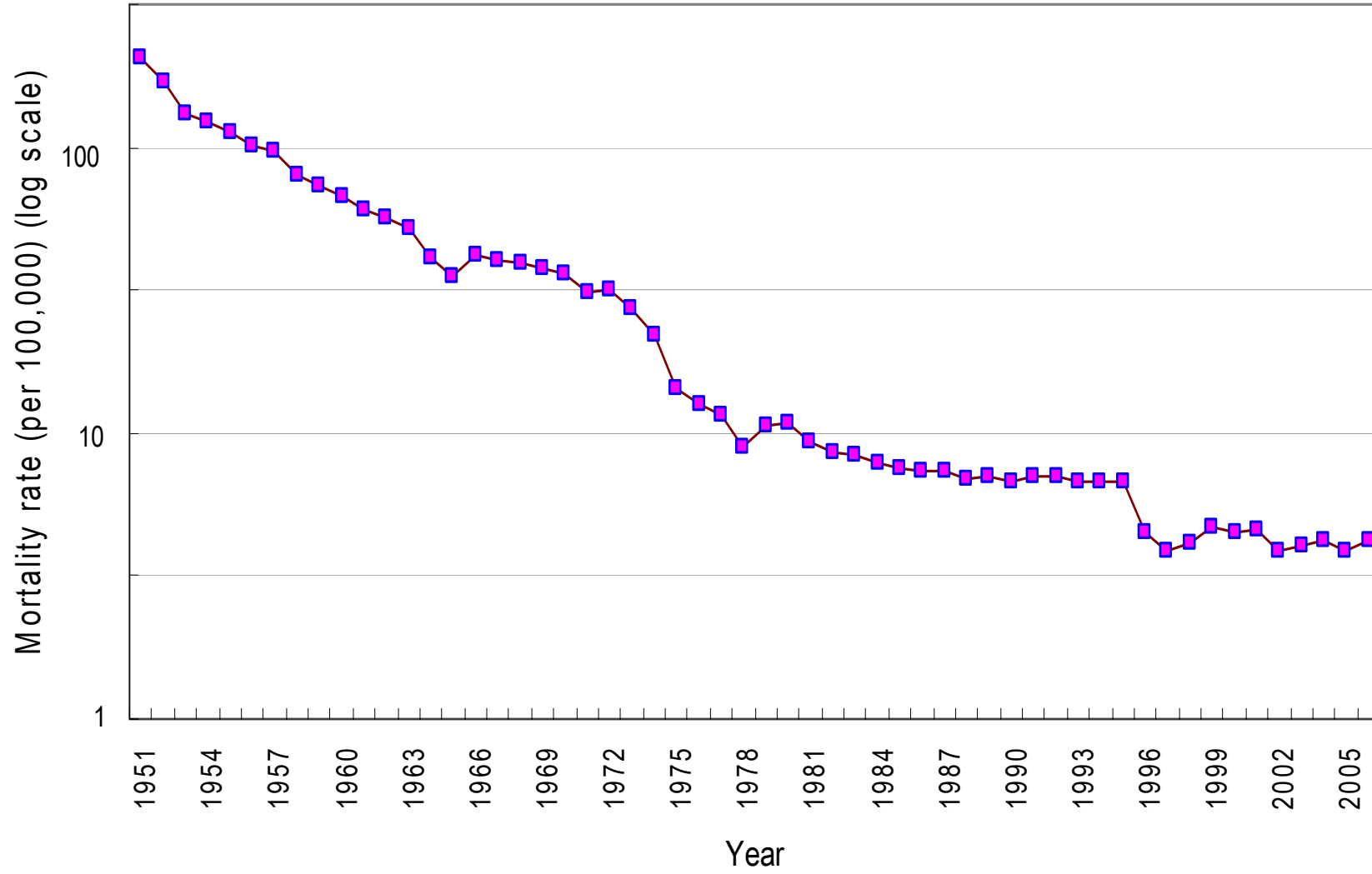
WHO

Western Pacific Region

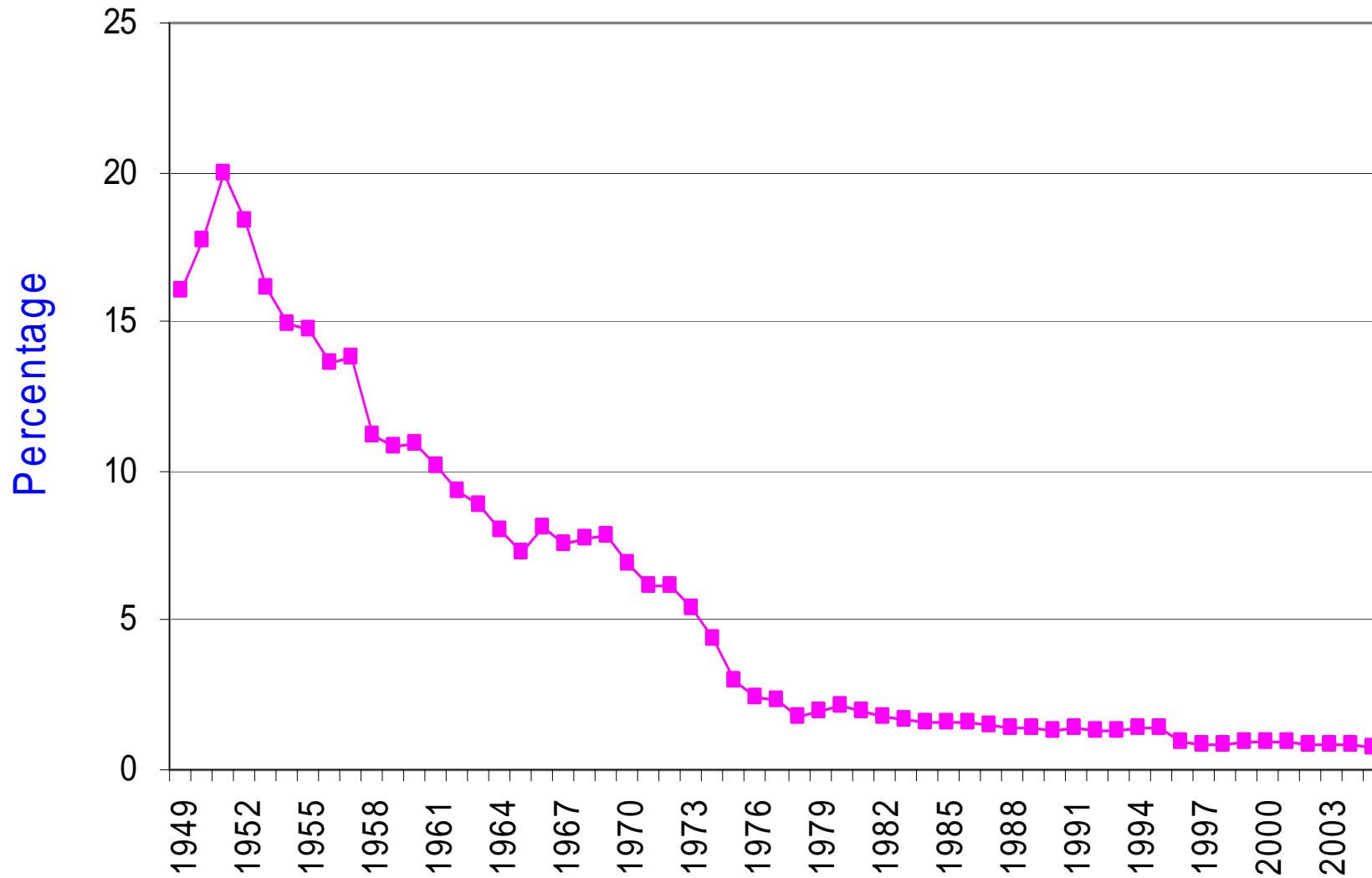
- Hong Kong as a place with intermediate TB burden



TB mortality rate (1951-2006)



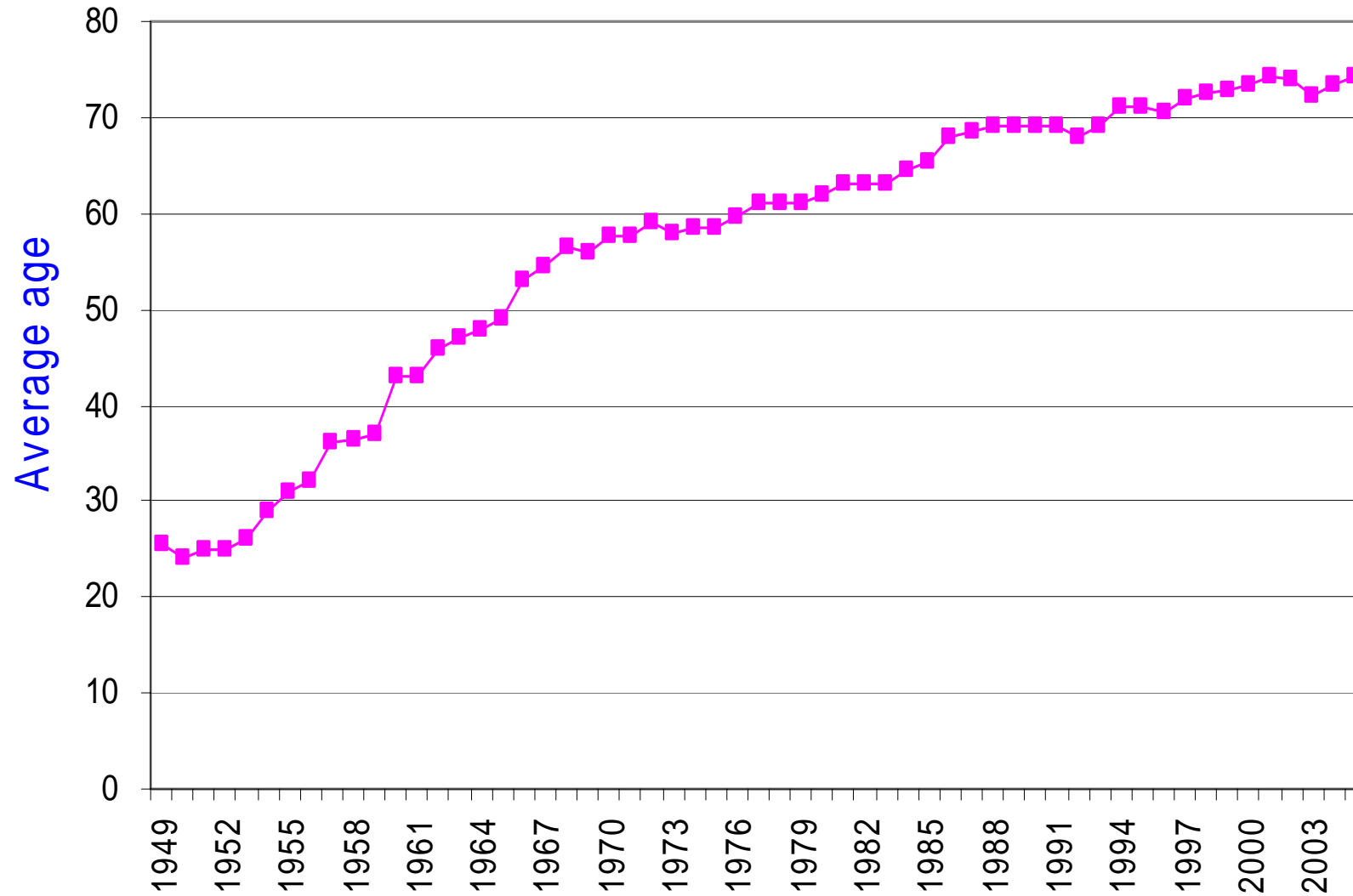
Percentage of TB deaths among all deaths (1949-2005)



Year



Average age of death (1949-2005)

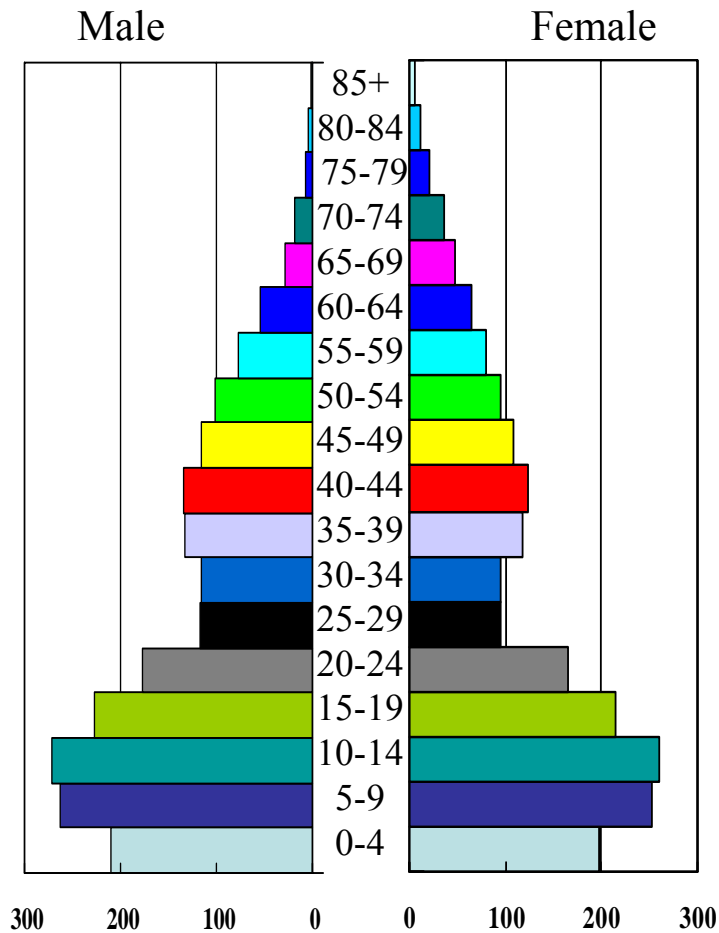


Year



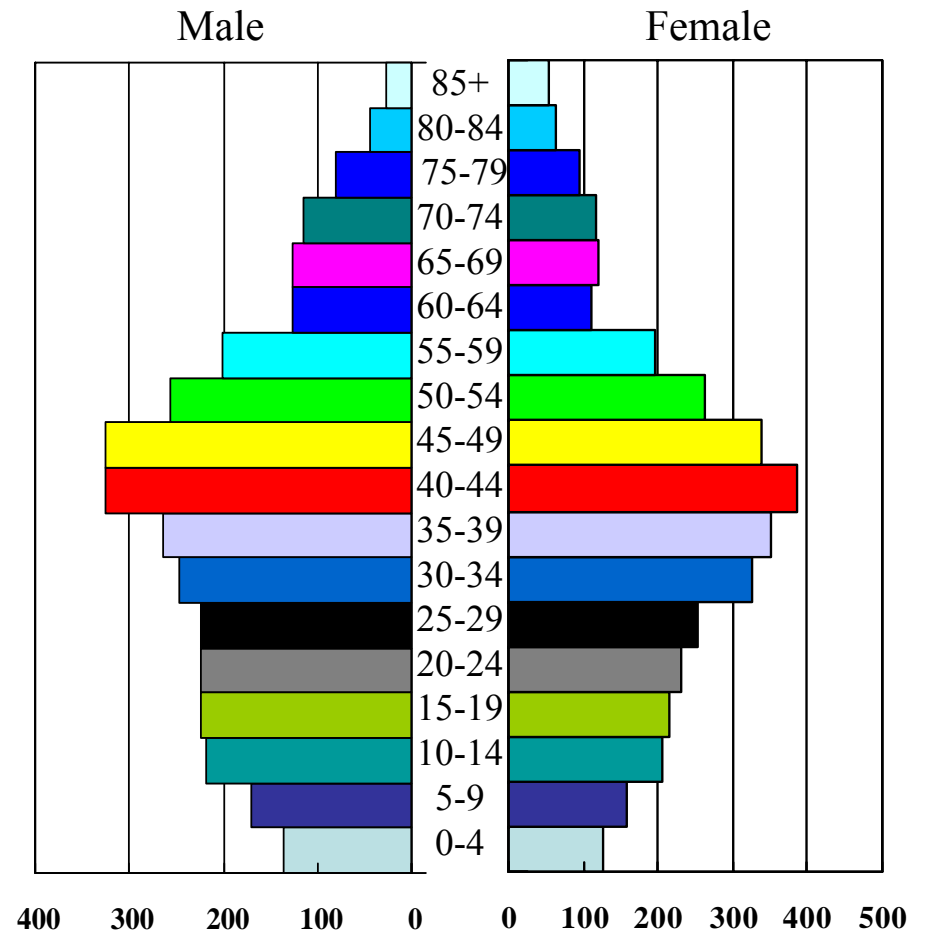
Population pyramids

1971 (mid-year)



Population (in thousands)

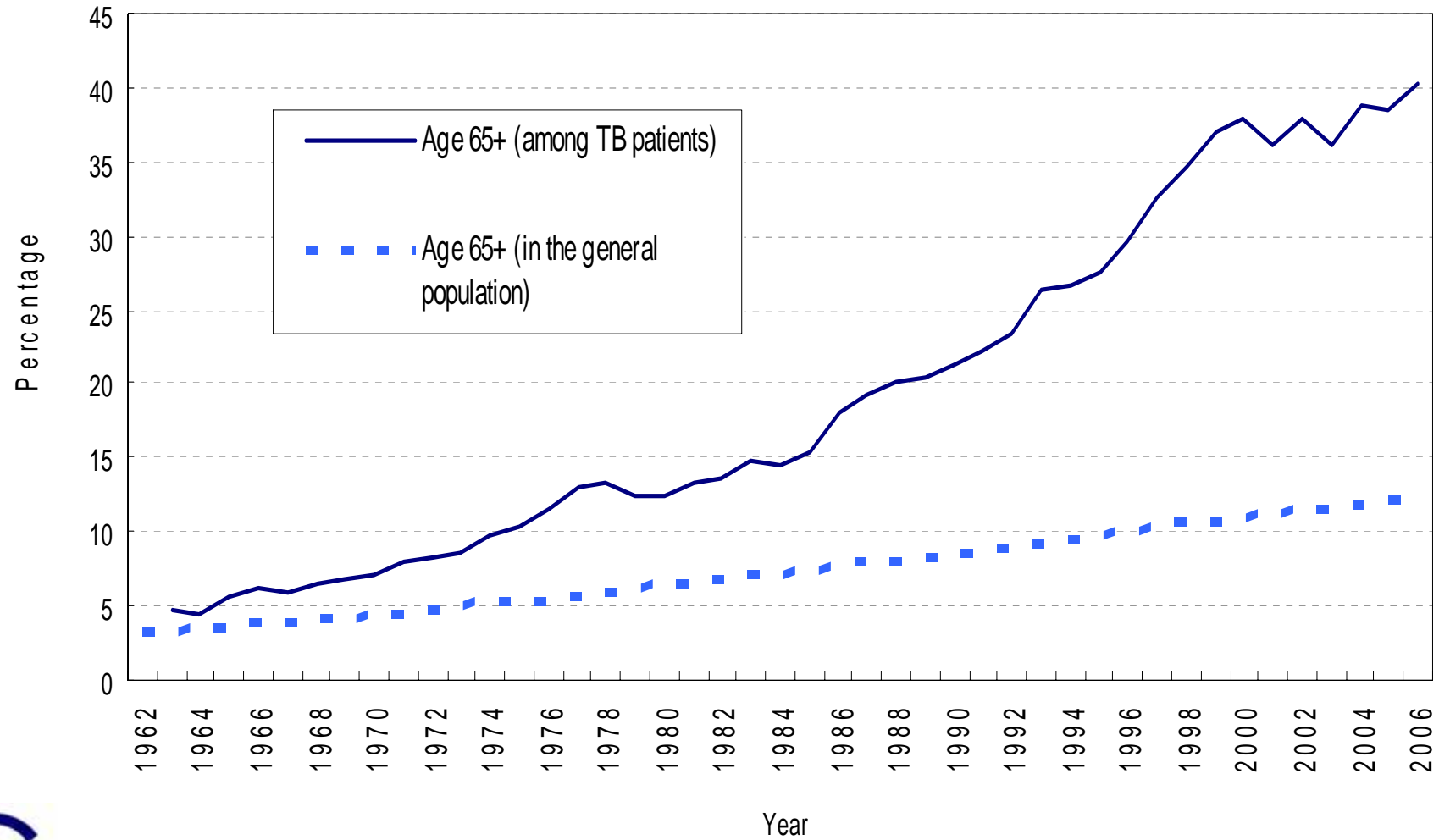
2005 (mid-year)



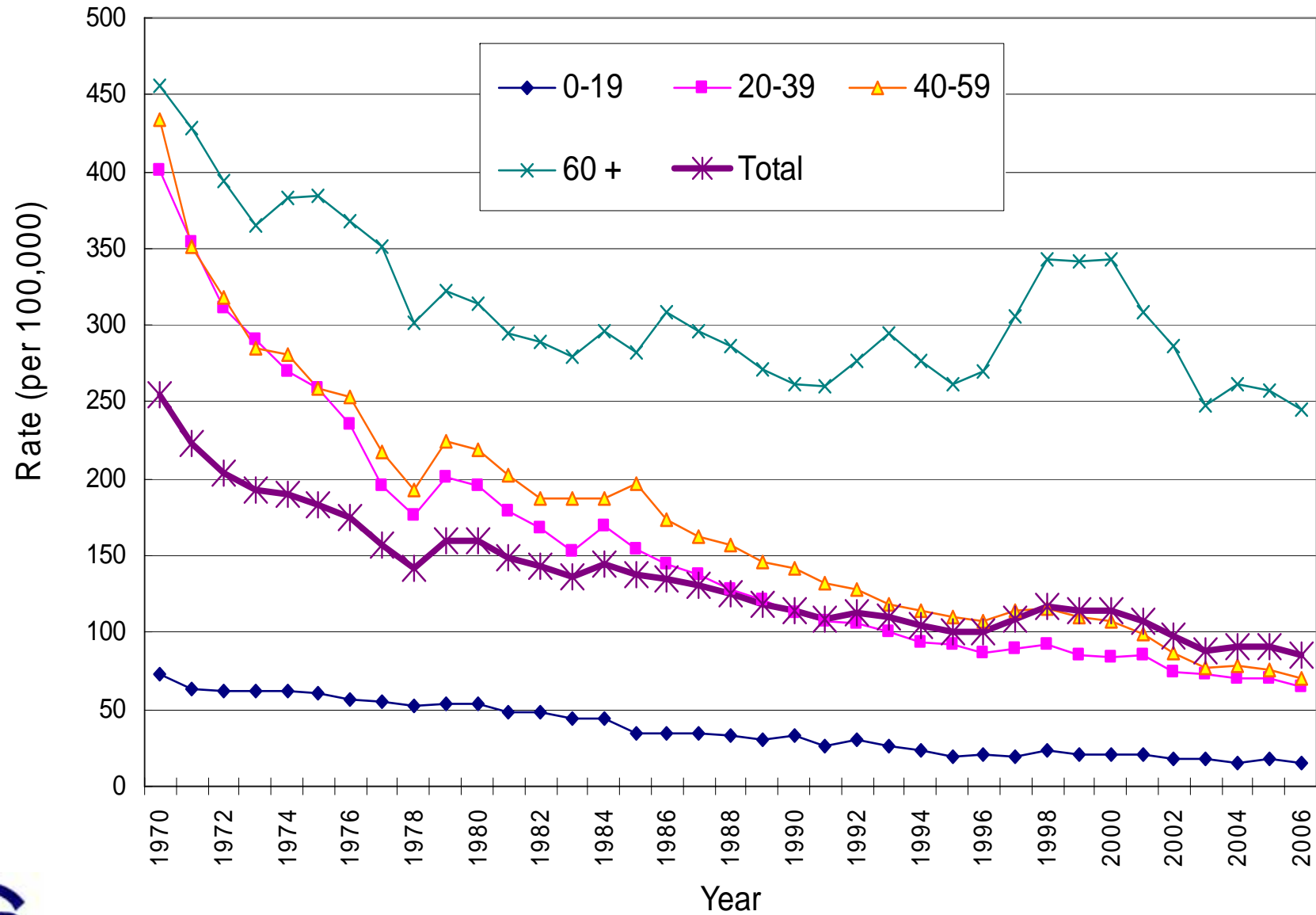
Population (in thousands)



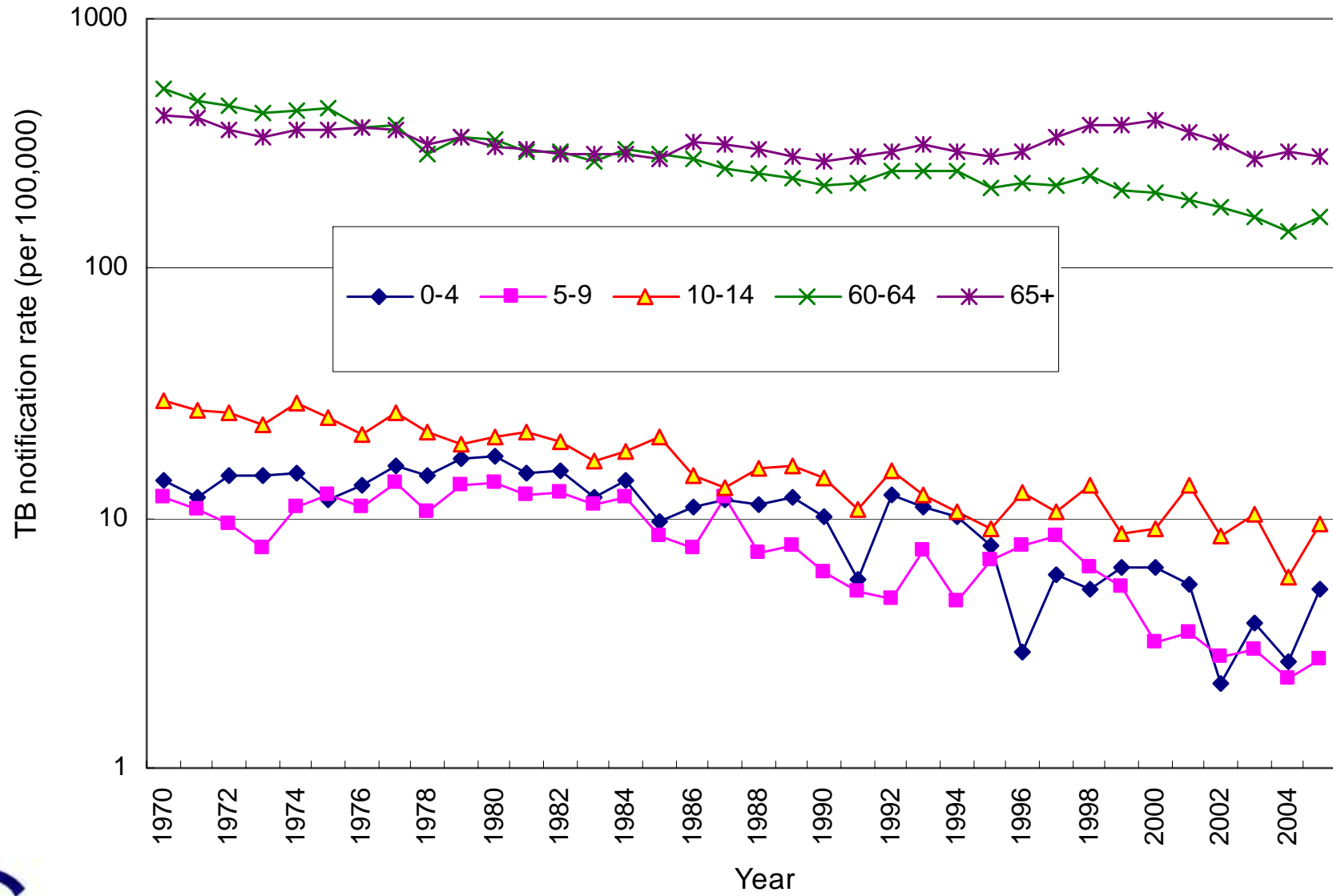
Percentage of elderly among TB patients and the general population (1962-2006)



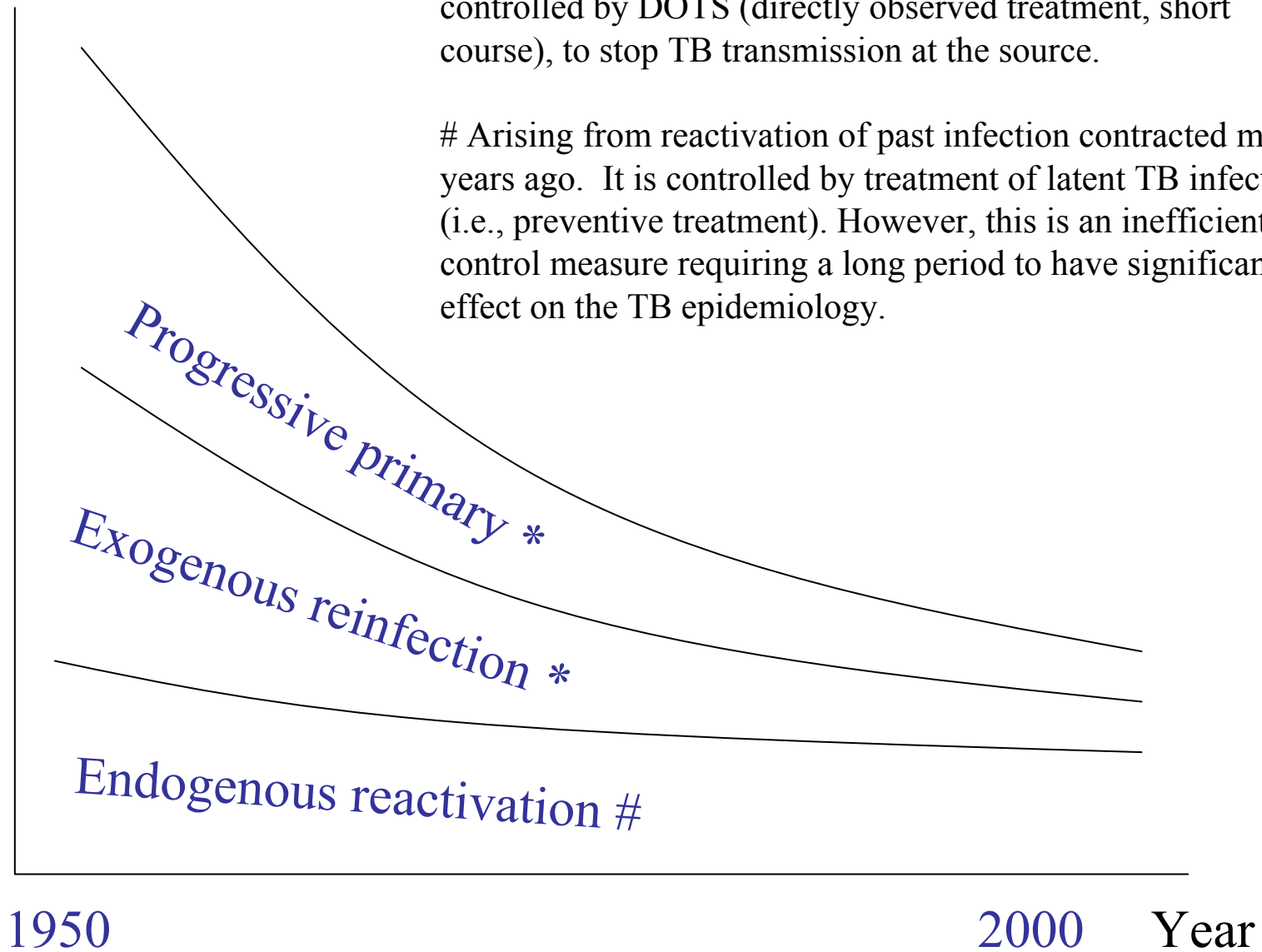
Age-specific TB notification rate (Both sexes 1970-2006)



Age-specific TB notification rate (1970-2005)



No. of TB cases



* Arising from transmission of tubercle bacilli. More readily controlled by DOTS (directly observed treatment, short course), to stop TB transmission at the source.

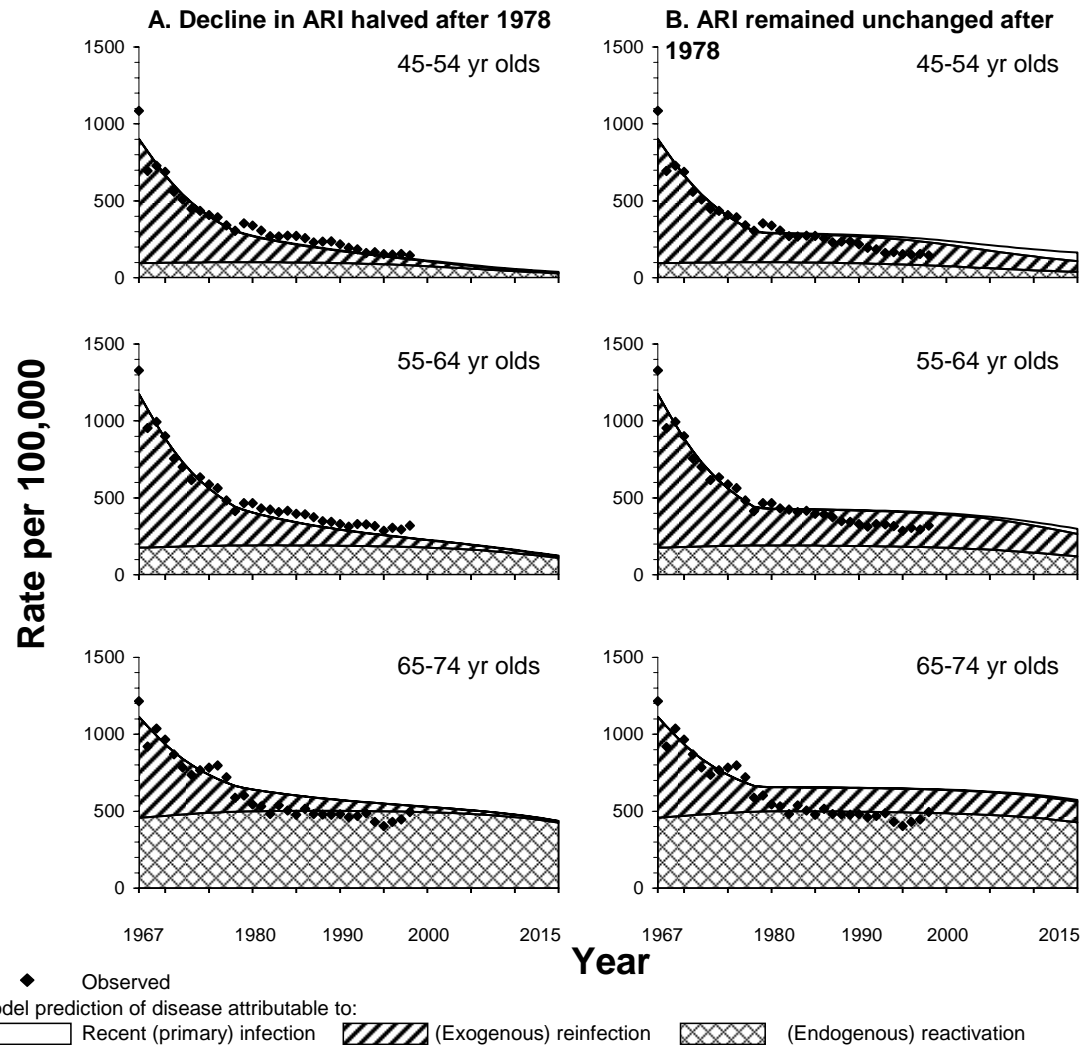
Arising from reactivation of past infection contracted many years ago. It is controlled by treatment of latent TB infection (i.e., preventive treatment). However, this is an inefficient TB control measure requiring a long period to have significant effect on the TB epidemiology.



Ageing of the TB epidemic →



Vynnycky E, et al.
 Limited impact of tuberculosis control in Hong Kong – attributable to high risks of reactivation disease



Comparison between the observed notification data among males in different age groups and model predictions of disease incidence during the period 1967-2015, based on best-fitting estimates of the risks of disease and assuming that the annual risk of infection was 10% in 1950, and that it declined by 7.5% pa until 1967, by 13.5% pa between 1967 and 1978. In the figures in the left-hand panel (A) the decline in the annual risk of infection is assumed to have halved after 1978 to 6.75% pa. In the figures in the right-hand panel (B) the annual risk of infection is assumed to have remained unchanged after 1978. The shaded areas reflect model predictions of the proportion of disease attributable to recent infection, refection and reactivation. Note that, as a result of the high prevalence of infection in all the age groups considered here, none of the disease incidence is attributed to recent (primary) infection.



Screening/ treatment for latent TB infection in Hong Kong

Service basis:

- Close contacts under the age of 35
- HIV sero-positive patients
- Others (e.g., immunocompromised patients, e.g., those on anti-TNF therapy)
- Silicotic patients



LTBI – local studies

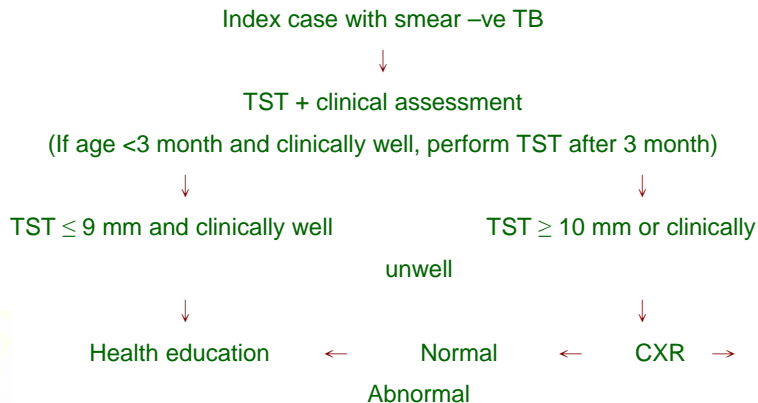
- T-spot test / Quantiferon-Gold (interferon-gamma assay)
 - Close contacts
 - Silicotics
 - HIV infected



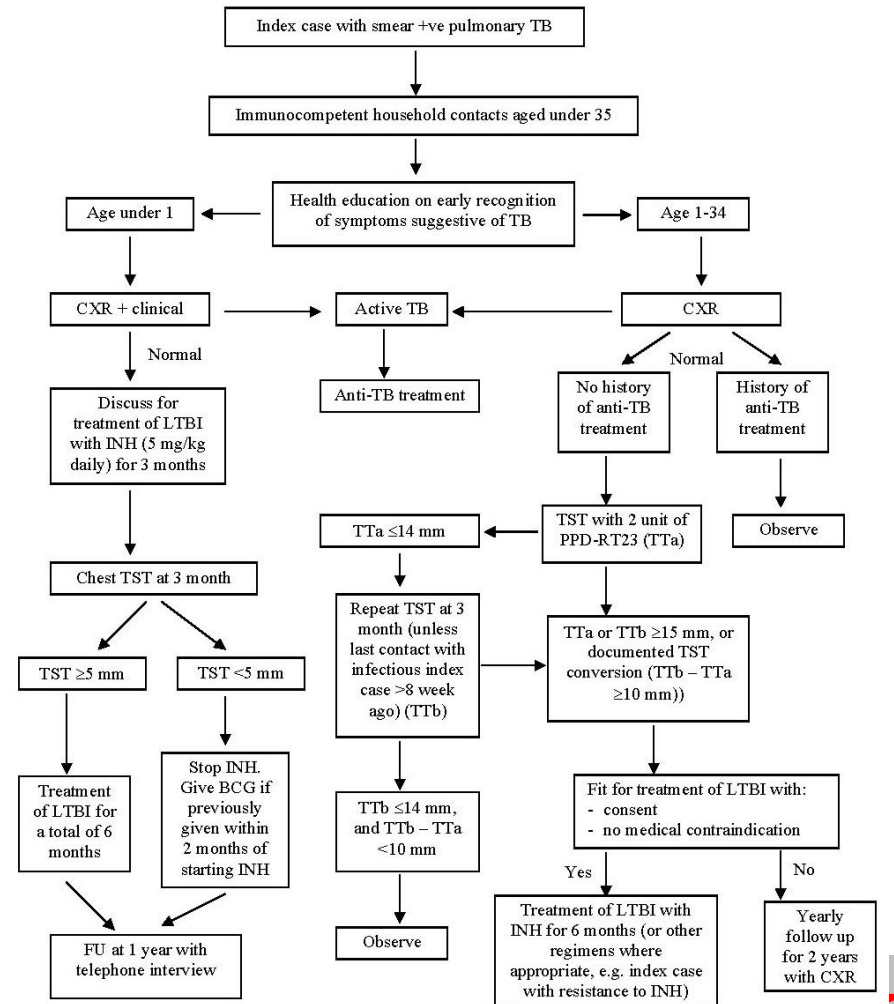
TB contact screening in Hong Kong (www.info.gov.hk/tb_chest)

Targeted subgroups	Circumstances	Strategy
Close contacts (household) under 5	Index case smear –ve Index case smear +ve	Flow chart A Flow chart B
Close contacts (household) above 5	Index case smear –ve Index case smear +ve	CXR Flow chart B
Close contacts (household) age ≥34	Index case smear –ve/+ve	CXR (or flow chart B in special circumstances)
Social contacts in special occasions	Individual assessment	
Contact examination in institutions (schools, elderly homes, etc.)	General principles: <ul style="list-style-type: none"> ➢ High risk of infectiousness: smear +ve index case ➢ Vulnerable group: very old, very young ➢ Signs of spread of infection: clustering of cases 	Mass contact examination

Contact investigation of close contacts aged below 5 with smear-negative index cases (Flow-chart A)



Tuberculin testing and treatment of LTBI among immunocompetent household contacts aged under 35 of smear +ve pulmonary TB (Flow-chart B)



Treatment of LTBI

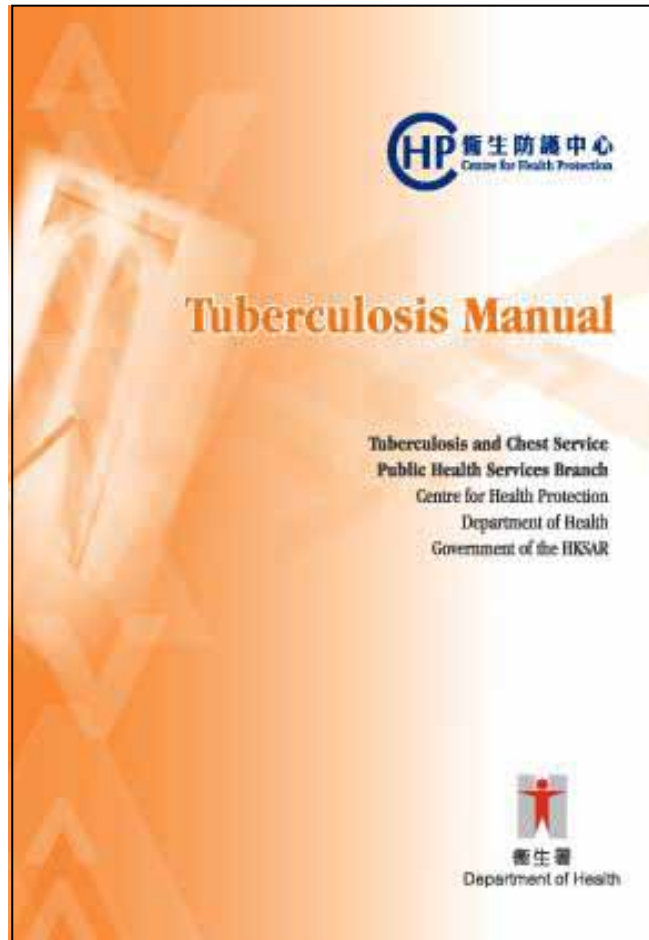
Number	2004	2005	2006	2007 *
Eligible for Rx of LTBI	1081	1290	1808	763
Agreed to TST	407	408	618	245
Eligible for Rx of LTBI after TST	198	200	286	38
Agreed to receive Rx of LTBI	99	66	116	28
Percentage (%)	2004	2005	2006	2007 *
Eligible for Rx of LTBI	100	100	100	100
Agreed to TST	37.7	31.6	34.2	32.1
Eligible for Rx of LTBI after TST	18.3	15.5	15.8	5.0
Agreed to receive Rx of LTBI	9.2	5.1	6.4	3.7



* 2007 figures are Jan-Jun 2007 figures



Setting standards for the management of TB



Professional Manual 2006

(available for download at www.info.gov.hk/tb_chest)





Some problems in the implementation of DOTS

- Patient's acceptance
 - inconvenient
 - time / distance
 - work problem
 - human rights



Treatment Results (2004 cohort) (Bacteriologically +ve cases)

		DOTS				non-DOTS	
		New bact +ve	Relap se	ReRx after failure	ReRx after default	New bact +ve	
Z	Cohort	2,777 %	392 %	2	28 %	760 %	
A	Cure	1,921 69.2	234 59.7	0	8 28.6	32 4.2	
B	Rx completion	290 10.4	28 7.1	1	1 3.6	5 0.7	
C	Death	153 5.5	26 6.6	0	1 3.6	13 1.7	
D	Failure	236 8.5	47 12.0	0	5 17.9	5 0.7	
E	Default	97 3.5	18 4.6	1	9 32.1	0 0.0	
F	Transfer	80 2.9	39 9.9	0	4 14.3	705 92.8	
		2,777 100.0	392 100.0	2	28 100.0	760 100.0	



Treatment results (2004 cohort) (Smear +ve cases)

		DOTS				non-DOTS	
		New smear +ve	Relapse	ReRx after failure	ReRx after default	New smear +ve	
Z	Cohort	1,356 %	195 %	1	13 %	337 %	
A	Cure	977 72.1	114 58.5	0	3 23.1	19 5.6	
B	Rx completion	110 8.1	14 7.2	1	1 7.7	1 0.3	
C	Death	77 5.7	12 6.2	0	1 7.7	4 1.2	
D	Failure	113 8.3	25 12.8	0	5 38.5	3 0.9	
E	Default	42 3.1	10 5.1	0	2 15.4	0 0.0	
F	Transfer	37 2.7	20 10.3	0	1 7.7	310 92.0	

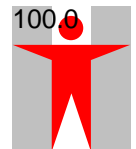
1,356 100.0

195 100.0

1

13 100.0

337 100.0



(Treatment success rate)

- At one year : about 80%
- At two year : about 85%



Case detection and treatment success rates 個案發現及治療成功率 (Global TB Report 2007) (全球結核病報告)

	Case detection (%) 個案發現率 (Whole country) (全國) (2005)		Case detection (%) 個案發現率 (DOTS) (2004)		Treatment success rate (New smear +ve, DOTS) (2004 cohort) 治療成功率 (新塗陽個案, DOTS) (2004隊列)
	New and relapse cases 新及復發個案	New smear +ve 新塗陽個案	New and relapse cases 新及復發個案	New smear +ve 新塗陽個案	
Mainland China 中國	64	80	64	80	94
Hong Kong (China) 香港	104	67	82	53	80 *
Macao 澳門	92	81	92	81	89
Japan 日本	73	67	62	57	57
Malaysia 馬來西亞	58	73	58	73	56
Singapore 新加坡	104	100	104	100	81
United States 美國	104	85	104	85	61
United Kingdom 英國	96	48	NA	NA	NA

(* 85% at 24 month) (* 24月為85%)



Drug-resistant tuberculosis

- multidrug-resistant TB
 - around 1% of bacteriologically positive cases
- extensively drug resistant TB
 - around 0.1% of bacteriologically positive cases

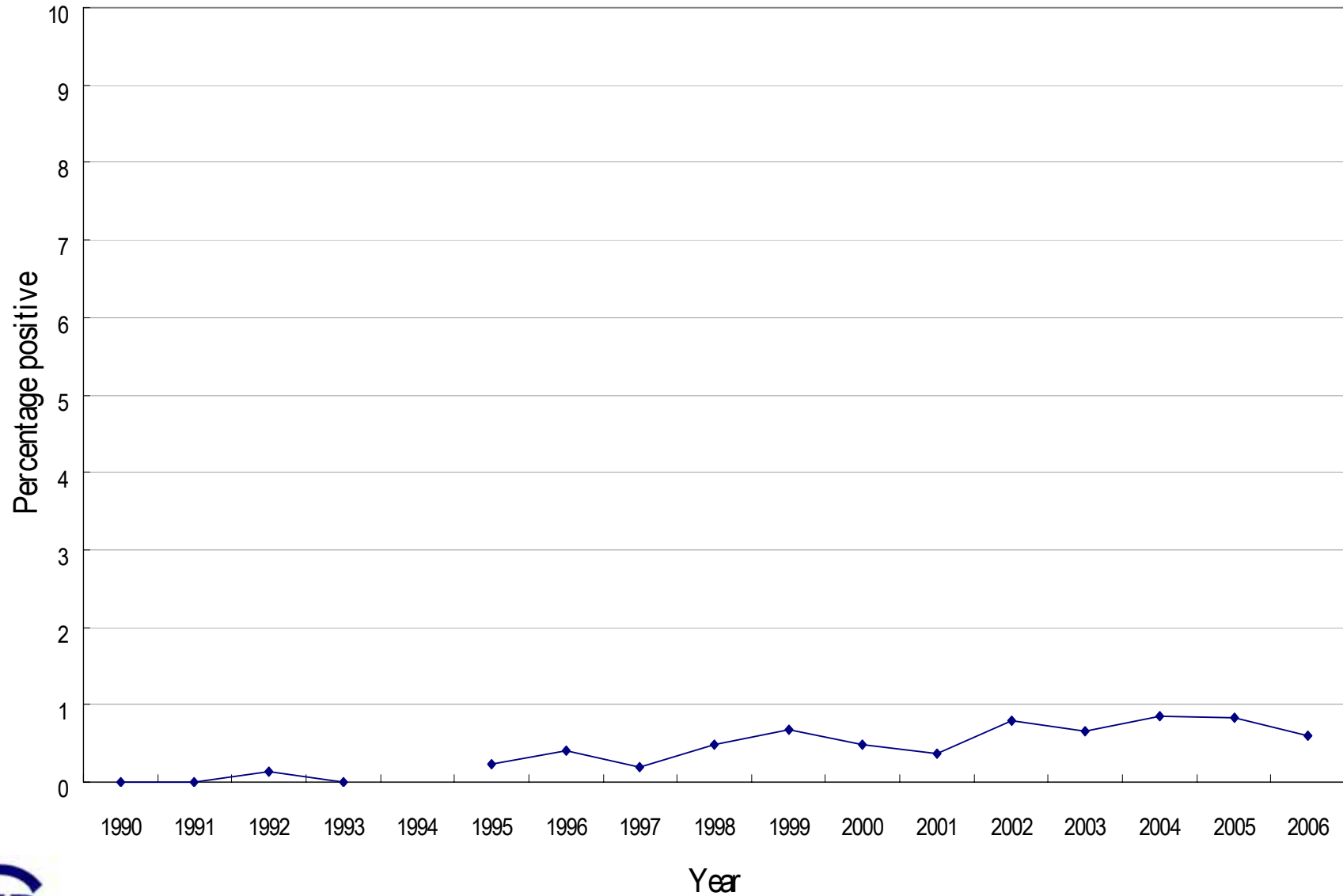


Drug-resistant TB (MDR-TB / XDR-TB)

- **Healthcare structure**
 - Territory-wide network of chest clinics and clinical services
 - DOTS/ DOTS-plus
 - TB Reference Laboratory (one of the Supranational TB Reference Laboratories in Western Pacific Region, designated by WHO in 2006)
 - Vigilant surveillance system
- **Case management**
 - Use of second-line drugs (generally readily available)
 - Supportive measures (rest, diet, avoid smoking)
 - Counselling and health education (public health issues)
 - Treatment success (till end of treatment ~ 24 month):
 - MDR-TB: 60 to 80%
 - XDR-TB: around 50%
- **Monitoring/ parameters**
 - Rates:
 - MDR-TB: around 1% of bacteriologically-positive TB cases
 - XDR-TB: around 0.1% (on average about 3 cases each year) (no known HIV-seropositive cases of XDR-TB locally)
 - Mortality rate of XDR-TB:
 - 30% during early phase up to 3 years
 - Others: may deteriorate and die from TB or other coexisting diseases



HIV seroprevalence among TB patients (UAS) (1990-2006)



TB Epidemiology in Hong Kong – summary

- Notification rate: general downward trend with a stagnant trend in recent years
- Death rate: decline faster than notification rate
- Probable reasons for a stagnant trend in recent years:
 - Strengthening of surveillance system
 - Ageing population
 - Increasing proportion of TB among elderly subjects
 - Slow decline in notification rate among elderly subjects
 - Prolonged survival of subjects with chronic debilitating illnesses
 - Mobile population
 - Increasing importance of LTBI



Control of TB in Hong Kong - challenges

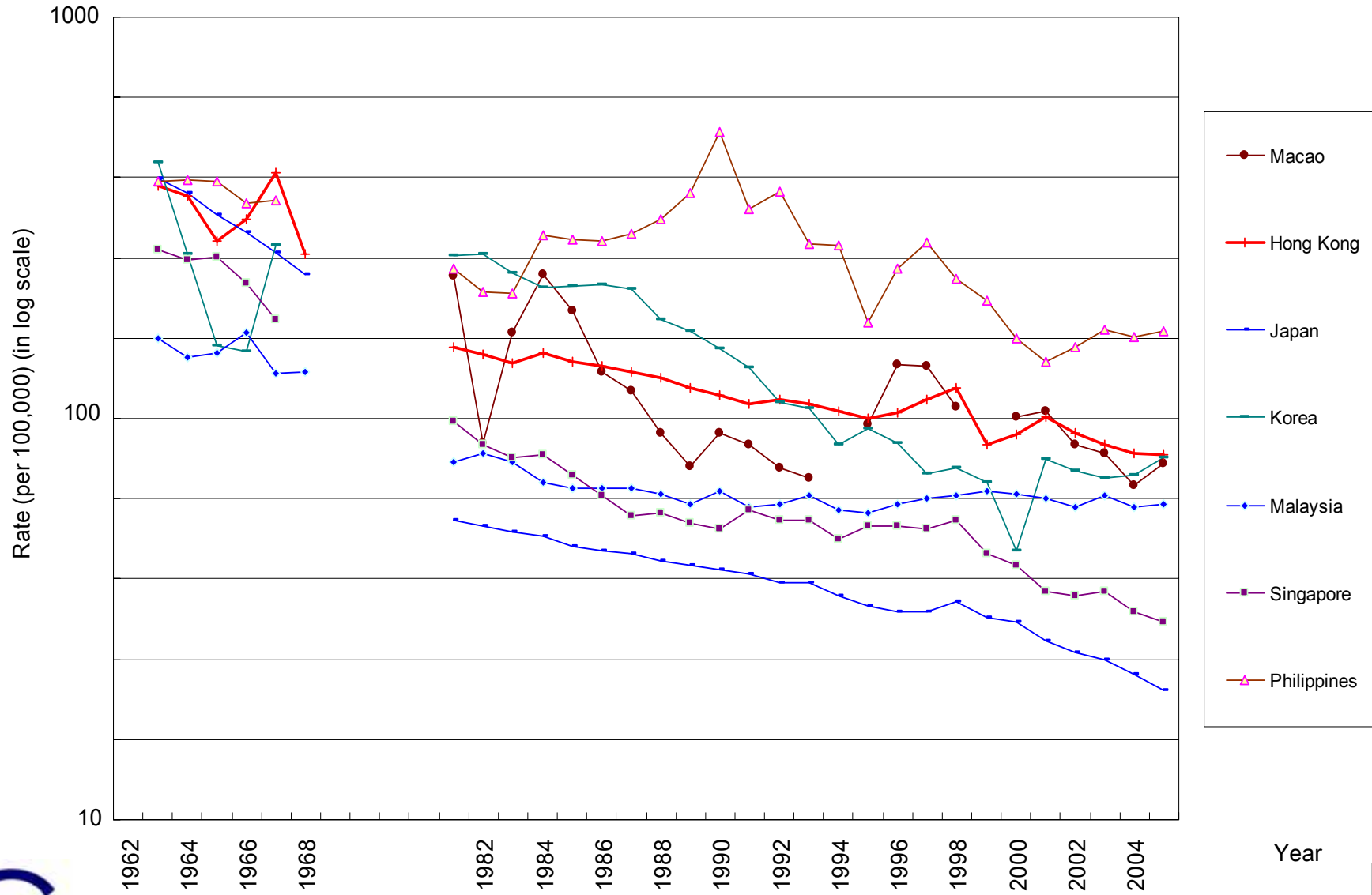
- Dense population
- Population movement
- Ageing population
- High prevalence of disease in the neighbourhood
- High prevalence of infection locally

Others:

- Level of drug resistance
- Level of education of the public
- TB as a stigma
- Defaulters
- HIV infection



TB rates in countries/places (Western Pacific Region)



Thanks!

Website of “TB in Hong Kong” :
www.info.gov.hk/tb_chest

