



# On The Provision of Sustainable Public Transit Services (PTS): The Case of Hong Kong

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1970

1980

1990 - 2000

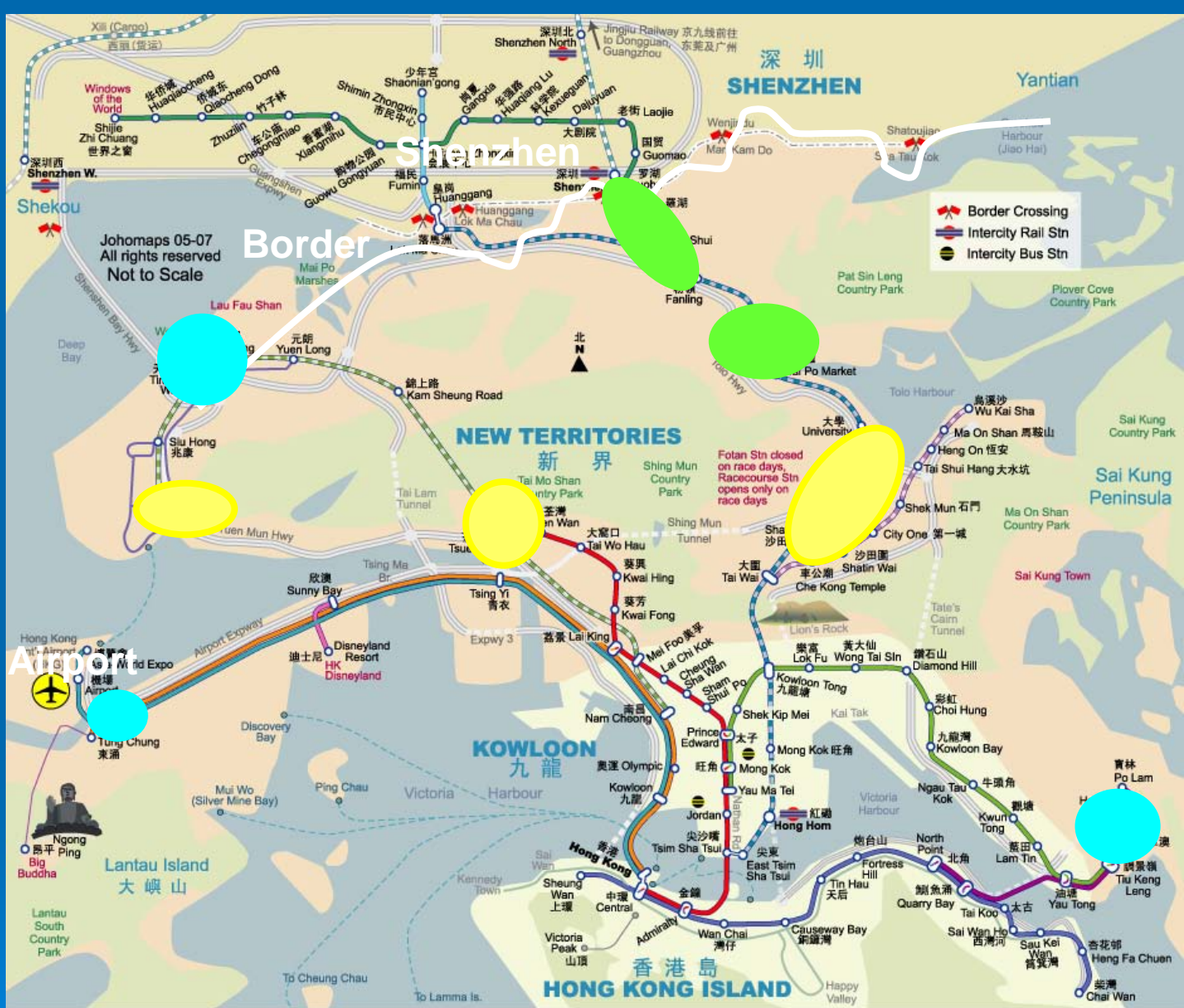
Shenzhen

Border

Airport

Downtown





Johomaps 05-07  
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Not to Scale

Border

Border Crossing  
 Intercity Rail Stn  
 Intercity Bus Stn

- MTR Network** 地下鐵路
- 荃灣線 Tsuen Wan Line
  - 觀塘線 Kwun Tong Line
  - 港島線 Island Line
  - 東涌線 Tung Chung Line
  - 機場線 Airport Express
  - 將軍澳線 Tseung Kwan O Line
  - 迪士尼線 Disneyland Resort Line
  - 昂坪360 Ngongping 360 (Skyrail)

- KCR Network** 九廣鐵路
- 九廣東鐵 KCR East Rail
  - 九廣西鐵 KCR West Rail
  - 馬鞍山鐵路 KCR Ma On Shan Line
  - 輕便鐵路 KCR Light Rail Transit

- Others**
- 山頂纜車 Peak Tram
  - 渡輪 Ferry
  - 電車 Hong Kong Tramway

- Shenzhen Metro** 深圳地鐵
- Line 1 一号线
  - Line 4 四号线



# Background

- Population: ~ 7 million
- Total area: 1104 km<sup>2</sup>, about 20% land developed
- Car ownership: 52 per 1000 people, about 10% of the US figure, despite a similar level of GDP
- Urban density: 34,000 persons/km<sup>2</sup>
- In comparison: LA - 3,144; Tokyo - 7,100
- 11 million daily PTS trips, ~90% of all trips



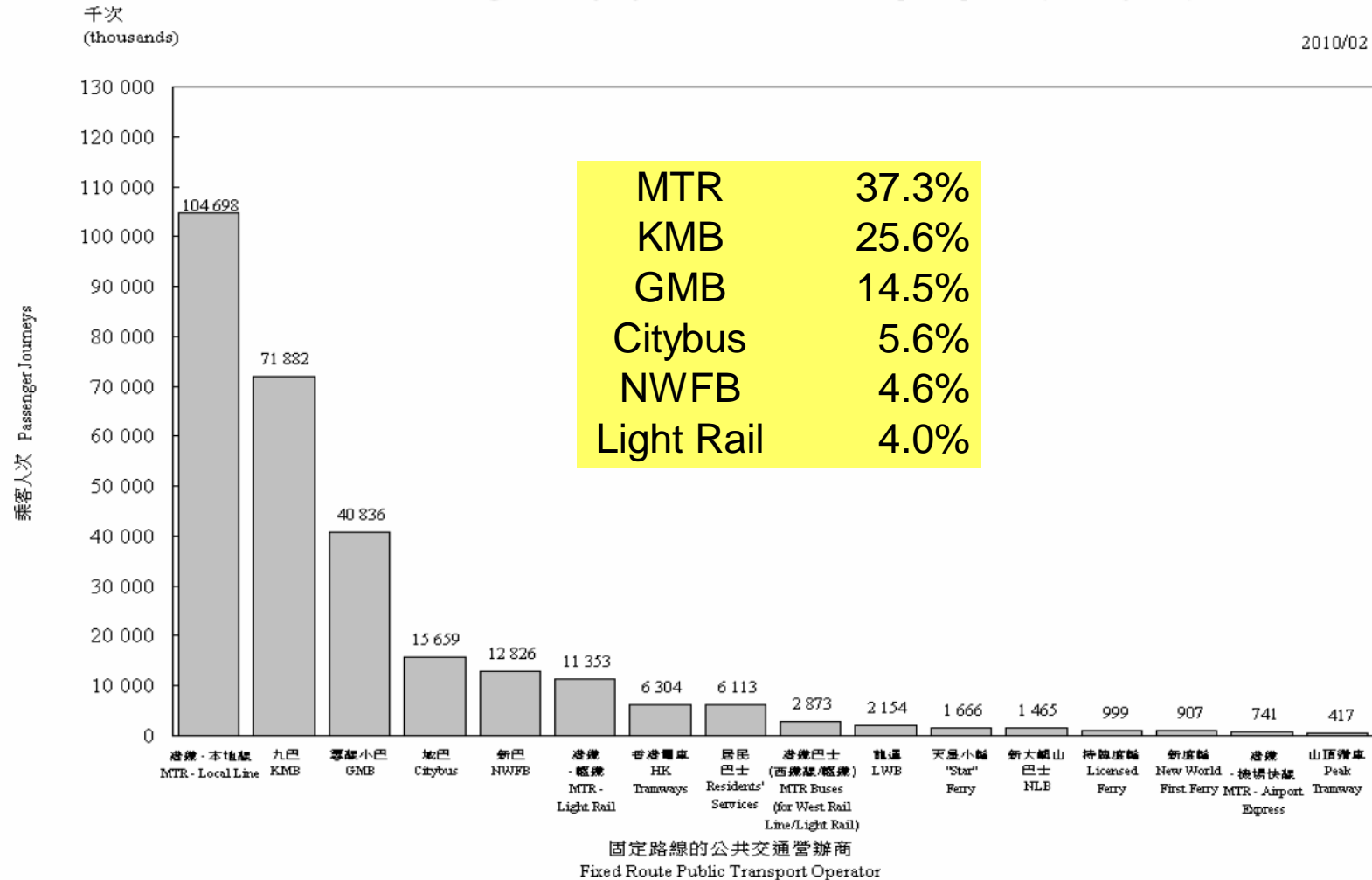
# Public Transport in Hong Kong

- Public Transport in HK involves a multi-modal network
  - Railways (MTR, West Rail, East Rail, LRT)
  - Franchised Buses (over 600 routes)
  - Red and green Minibuses (hundreds of routes)
  - Taxi, ferries, tram, peak Tram
- All modes are financially sustainable without direct government subsidy, so far.



# Modal Split

圖 2.1 - 按固定路線的公共交通營辦商劃分的乘客人次數字 (2010年2月)  
 Chart 2.1 - Number of Passenger Journeys by Fixed Route Public Transport Operator (February 2010)







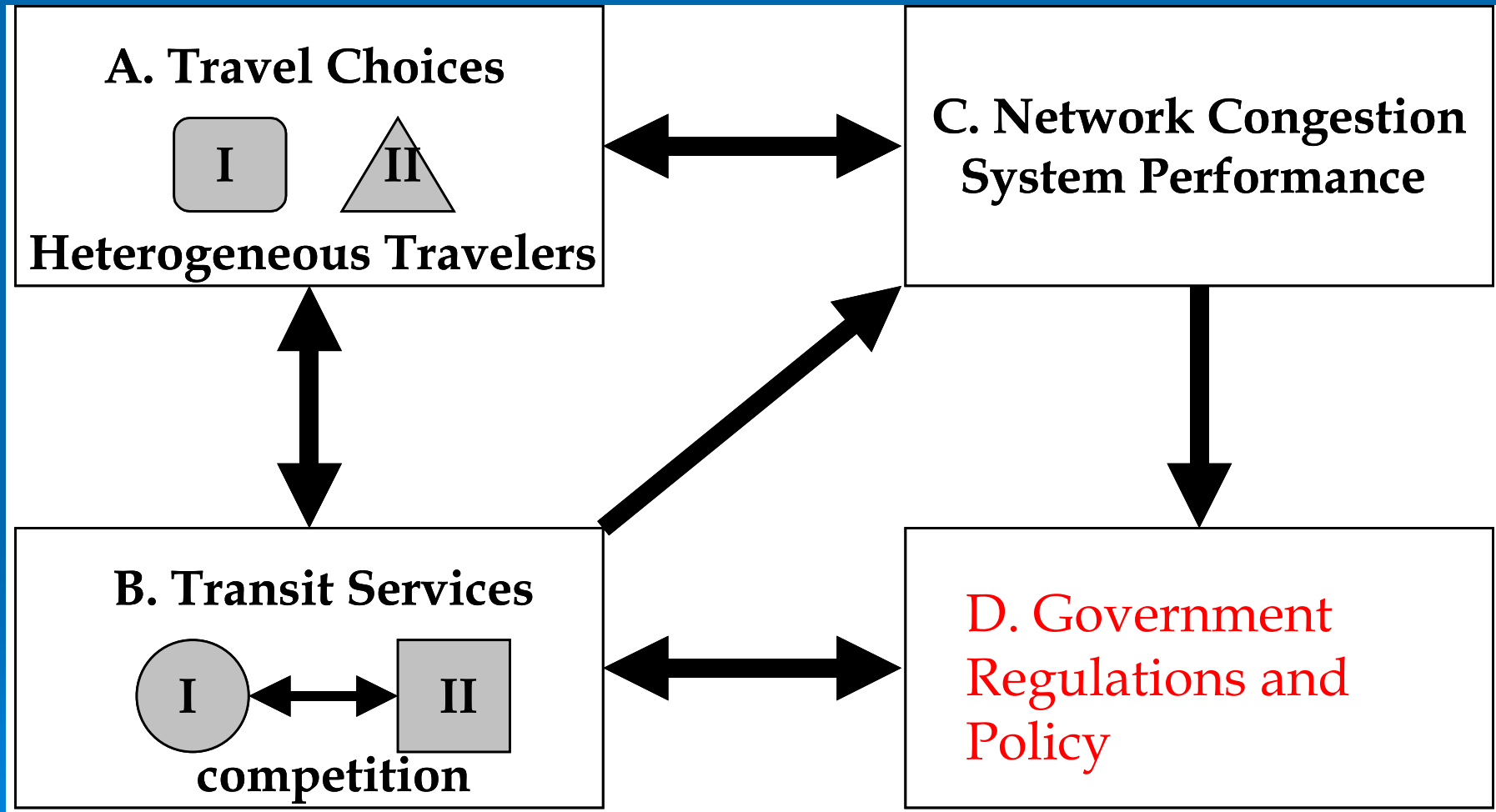
# Services Supply Comparison

Table 1: Rail and bus service supply per capita in 2004

	Hong Kong	London	Singapore
Rail car-km (million)	255	414	89
Bus vehicle-km (million)	513	450	299
Population (million)	6.9	7.4	4.2
Rail car-km per capita	37.0	56.3	21.0
Bus vehicle-km per capita	74.4	61.2	70.5
Combined rail car and bus vehicle-km per capita	111.4	117.5	91.5
Percentage of total passenger km on mass public transit	82%	30%	47%



# Strategic Interactions





# Land-use and Transport Policy in Hong Kong

1. The policy on land development
2. The Policy of Limiting Private Car Ownership and Usage
3. The Policy of Transit Service Coordination and Protection (1980's)
4. The Policy of Service Proliferation and Competition (1990's)
5. The Policy of Service Rationalization and Consolidation (2000's)

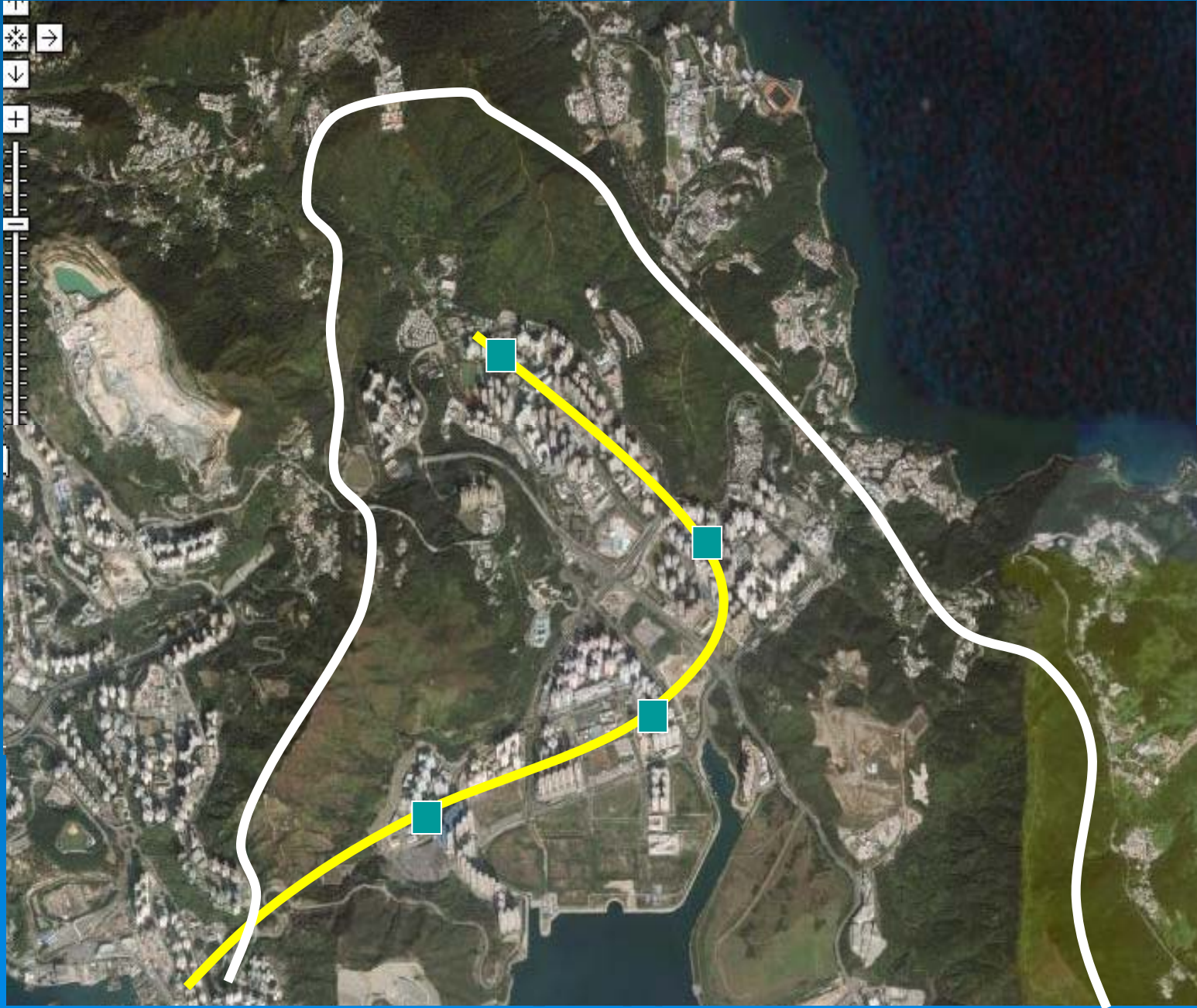


# Policy on Land Development

- Scarcity of land and expanding population form a catalyst for high density development sustaining over the years
- Developments of the existing central business districts around the Victoria Harbor generate tremendous converging traffic demand
- High-density residential estates, or new towns, built around railway stations form large passenger bases to support mass transit railways and their financial sustainability

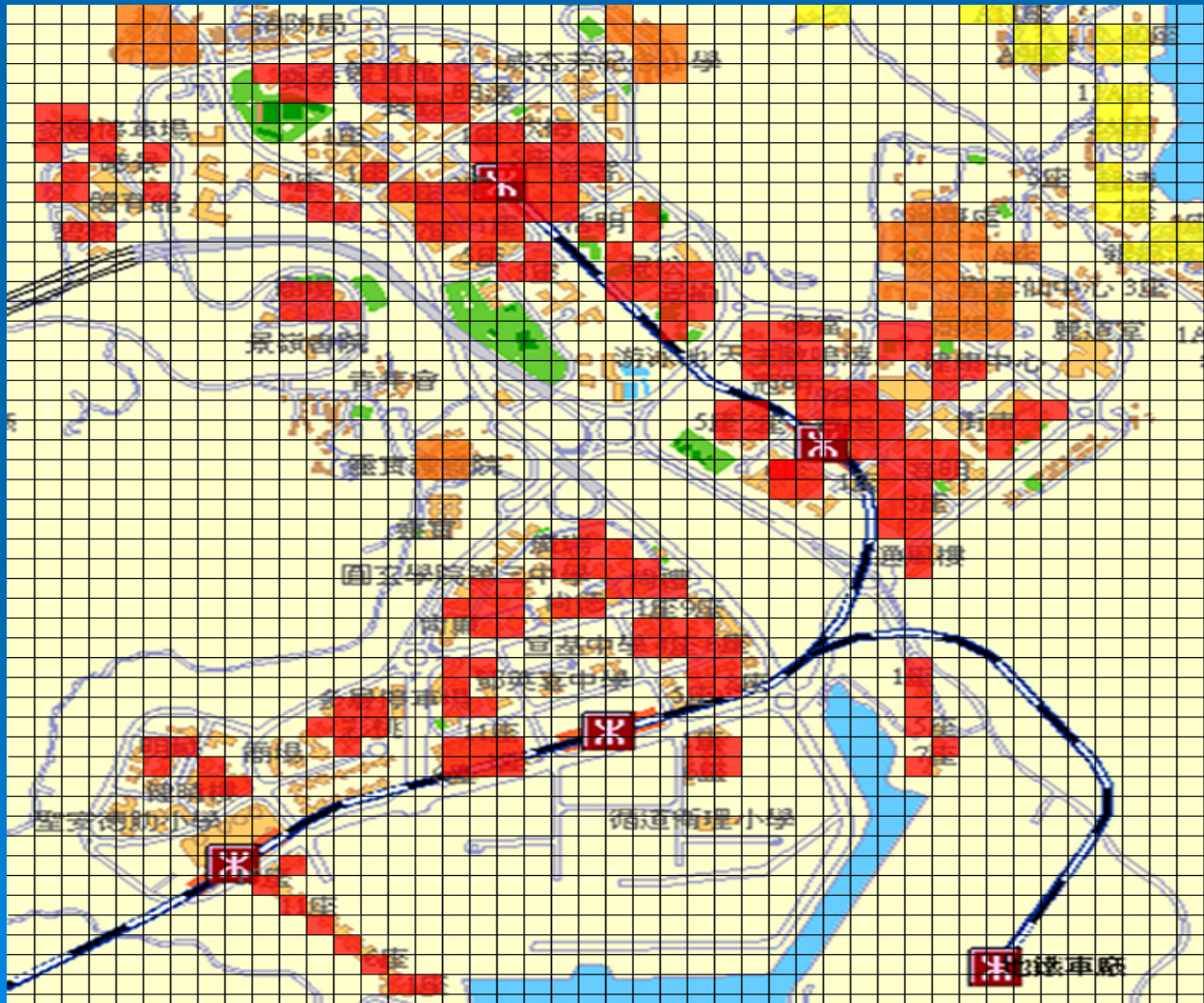


# Example: TKO new town





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The total development area of TKO is about 10.05 km<sup>2</sup>, with a population of around 350,000. The average density is 35,000 per km<sup>2</sup>



# Policy of Limiting Private Car Ownership and Usage

- Car ownership: 52 per 1000 people. The US figure is 480 per 1000 people
- New private cars are subject to the first registration tax from 35% to 100% of the vehicle cost
- The fuel tax for unleaded gasoline in Hong Kong is eight times the total sum of federal and state fuel taxes in the US (IRF, 2004).
- Unleaded fuel in Hong Kong costs US\$6.5 per gallon.
- Private car trips constitute 10% of total daily passenger trips, as compared with 95% in the US.



# Policy of Transit Service Coordination and Protection (1980's)

- First White paper on Internal transport policy in 1979
  - Mass Transit Railway (MTR) constructed; Kowloon Canton Railway (KCR) expanded to support the development of new towns
  - Both railways operate in prudent commercial principles.
- The transport policy gave priority to rail, thus prohibited direct competition from other modes
- This policy assured sufficient traffic demand for mass transit railways, hence the huge investment would be paid back within reasonable time
- This policy allowed the creation of a win-win situation. The government can thus rely on the private sector to provide for services according to the user-pay principle without subsidy





# Policy of Service Proliferation and Competition (1990's)

- Second White Paper on Transport Policy in 1990
  - encourage competition and develop a more balanced usage of between bus and rail, expand and upgrade PTS
- PTS in Hong Kong in the 1990's were substantially improved, through services introduced by new operators and encouragement of modal competition in lieu of the policy of line protection.
- This policy was initially welcome, at the expense of congestion externality – more and more buses on major, profitable corridors, leading to significant increases in congestion, and financial difficulties for operators – the demand for each service was spread very thin

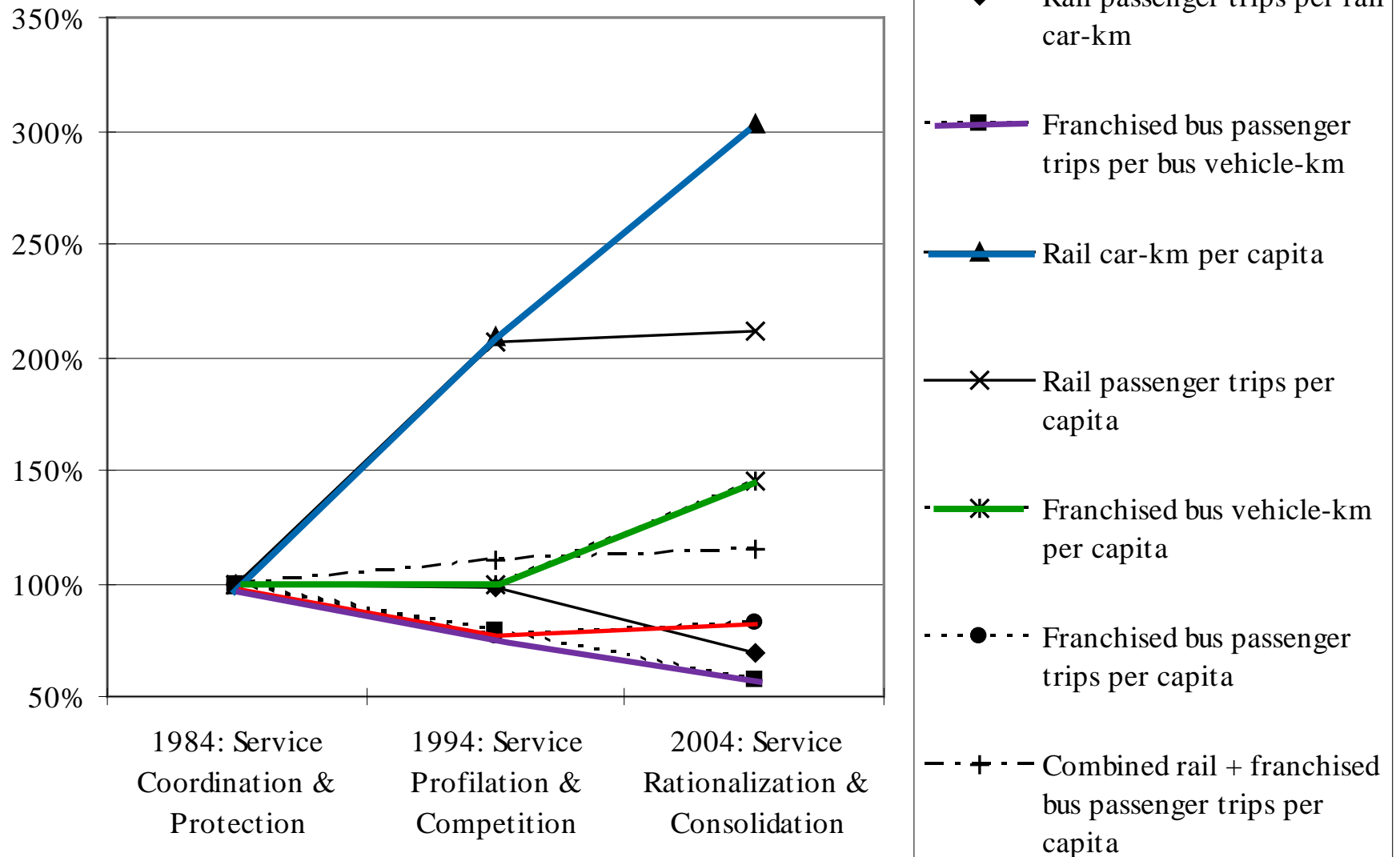


# Policy of Service Rationalization and Consolidation (2000's)

- In 1999, the government outlined future transport strategies
  - (1) better integration of transport and land use, (2) better use of railway as the backbone, (3) better use of ITS, etc.
- One objective was to increase rail-based PT journeys from 33% to 40% ~ 50% in 2016. Plans for bus service consolidation were strongly objected.
- This policy were not welcome and resisted at every step of the way.
- In the end, once a public transport service is offered, it is extremely difficult to consolidate its service. This is an important lesson to be learned

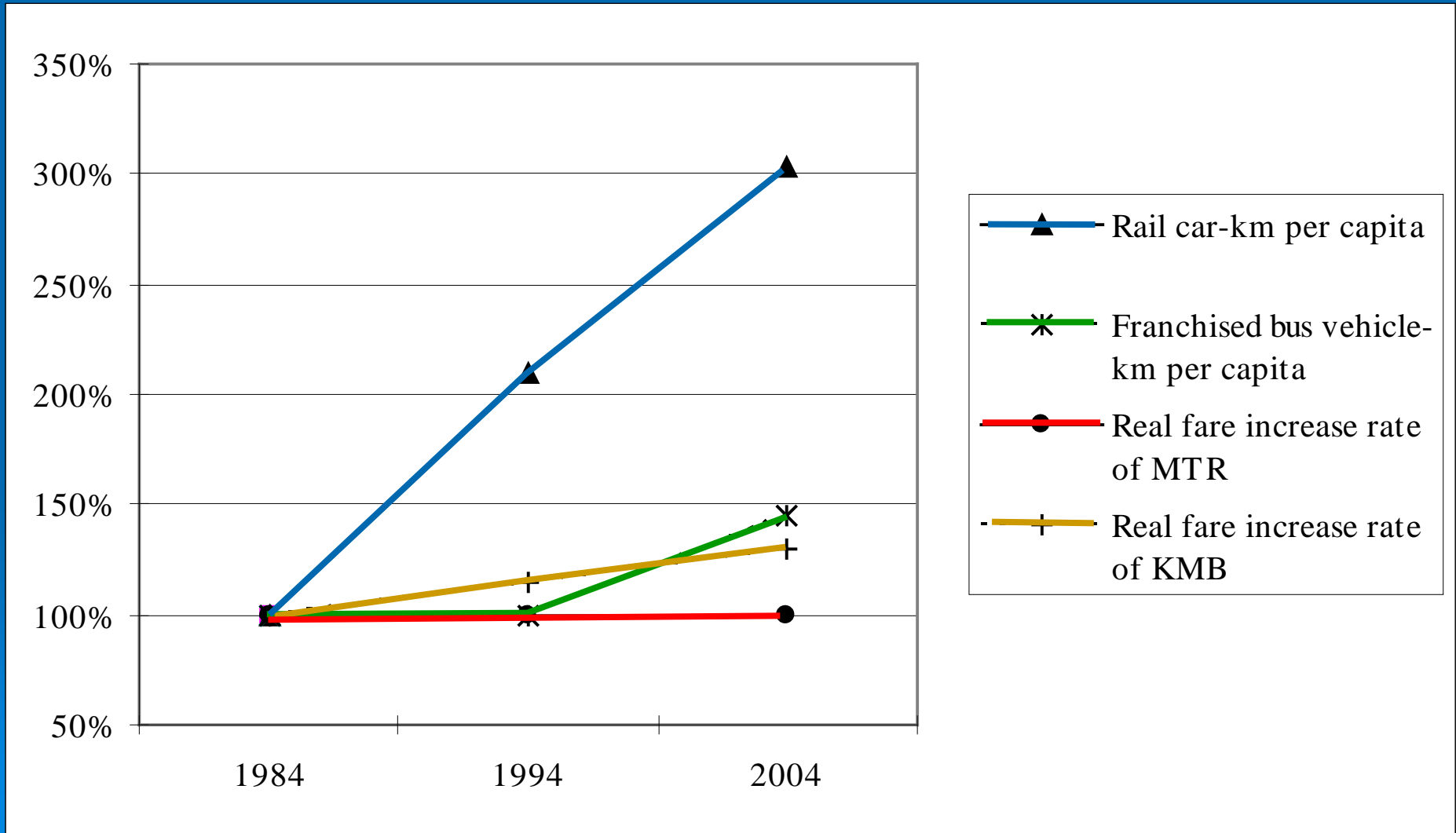


# Service Supply and Utilization





# Service Supply and Fare





# Profitability of Operators

<b>Return rates</b>	<b>MTR (rail): Average after opening of the Airport Railway (1998 – 2006)</b>	<b>KMB (bus): Average over last 5 years (2002-2006)</b>
Operating margin before tax	6.0%	14%
Operating return on net fixed asset	0.7%	14%
Total return (including property profit) on net fixed asset	5.1%	N/A



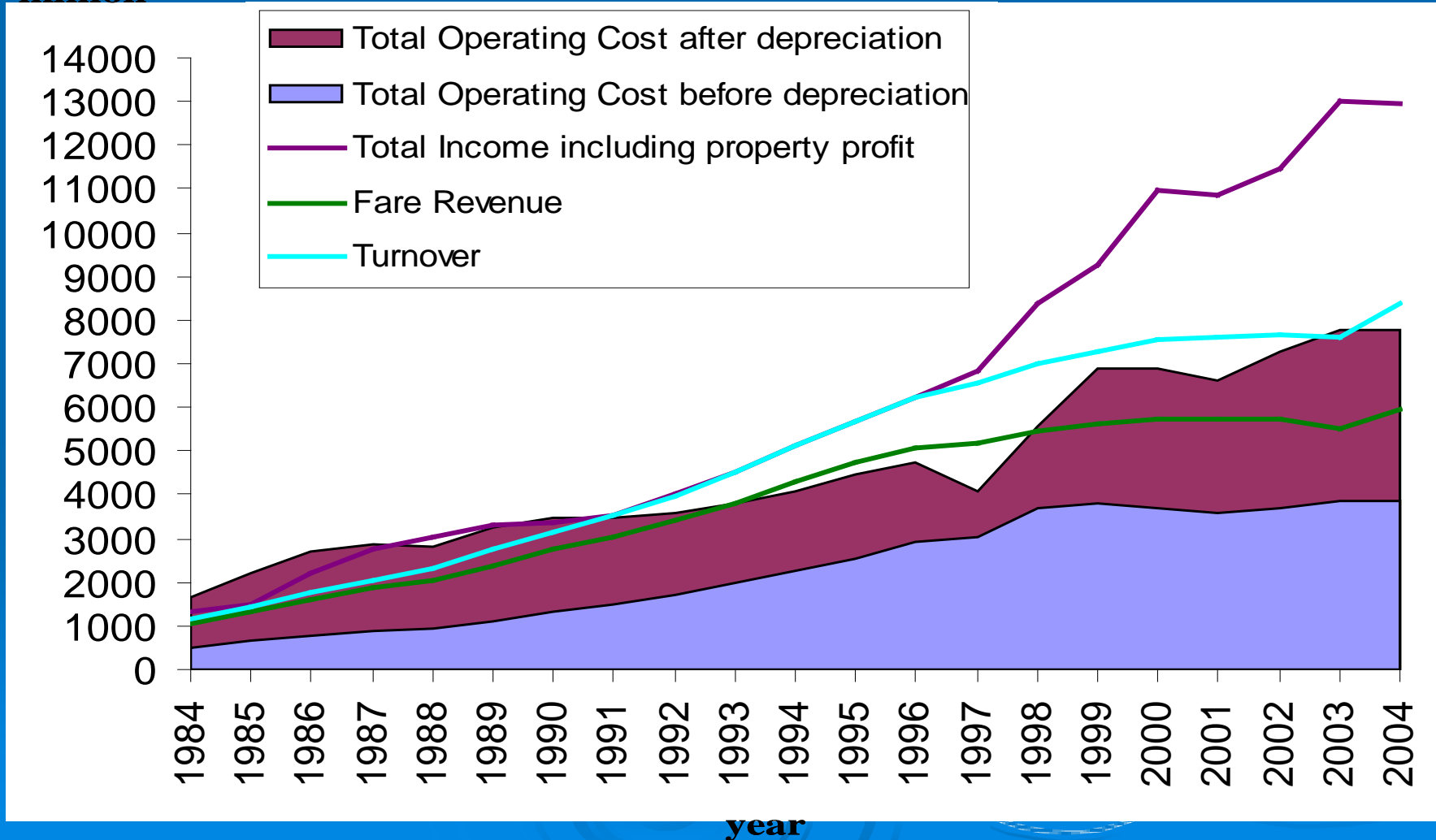
# Comparison of Operating Costs

<b>Average operating cost (HK\$)</b>	<b>MTR (rail)</b>	<b>KMB (bus)</b>	<b>MTR Vs KMB (rail vs bus)</b>
<b>Before depreciation &amp; interest</b>			
• Per passenger carried (HK\$)	3.8	3.8	Similar
• Per space-km (HK\$)	0.09	0.10	10% lower
<b>After depreciation &amp; interest:</b>			
• Per Passenger carried	7.2	4.5	60% higher
• Per space-km (HK\$)	0.18	0.12	50% higher



# Cost and turnover of MTR

million





# Elements of Transport Policy for Sustainable Public Transit Services

- The urban density of development is imperative to ensure financial sustainability.
- Privatization is not a panacea. Managing the provision of competitive services is critical.
- Defining the hierarchy of PTS is important for avoiding wasteful competition, hence ensuring efficiency of the system.





- Rail services are costly but can be operationally cost-efficient. Bus services are easier to achieve financial sustainability but their externalities cannot be ignored.
- The time scale of transport policy should be commensurate with the payback period of the rail infrastructure investment.
- The synergy between real-estate development on top of railway stations and rail patronage should be exploited.



# Further studies

- Private public partnership (PPP) structure for the provision of public transit services to exploit the synergy between real estate development and rail infrastructure development
- Financial sustainability of demand response public transit services, which is believed to be easier to achieve

