Intergovernmental 11th Regional
Environmentally Sustainable Transport (EST) Forum in Asia
2-5 October 2018, Ulaanbaatar, Mangolita

Transport Demand Management (TDM)

Policies and Measures for Sustainable Cities

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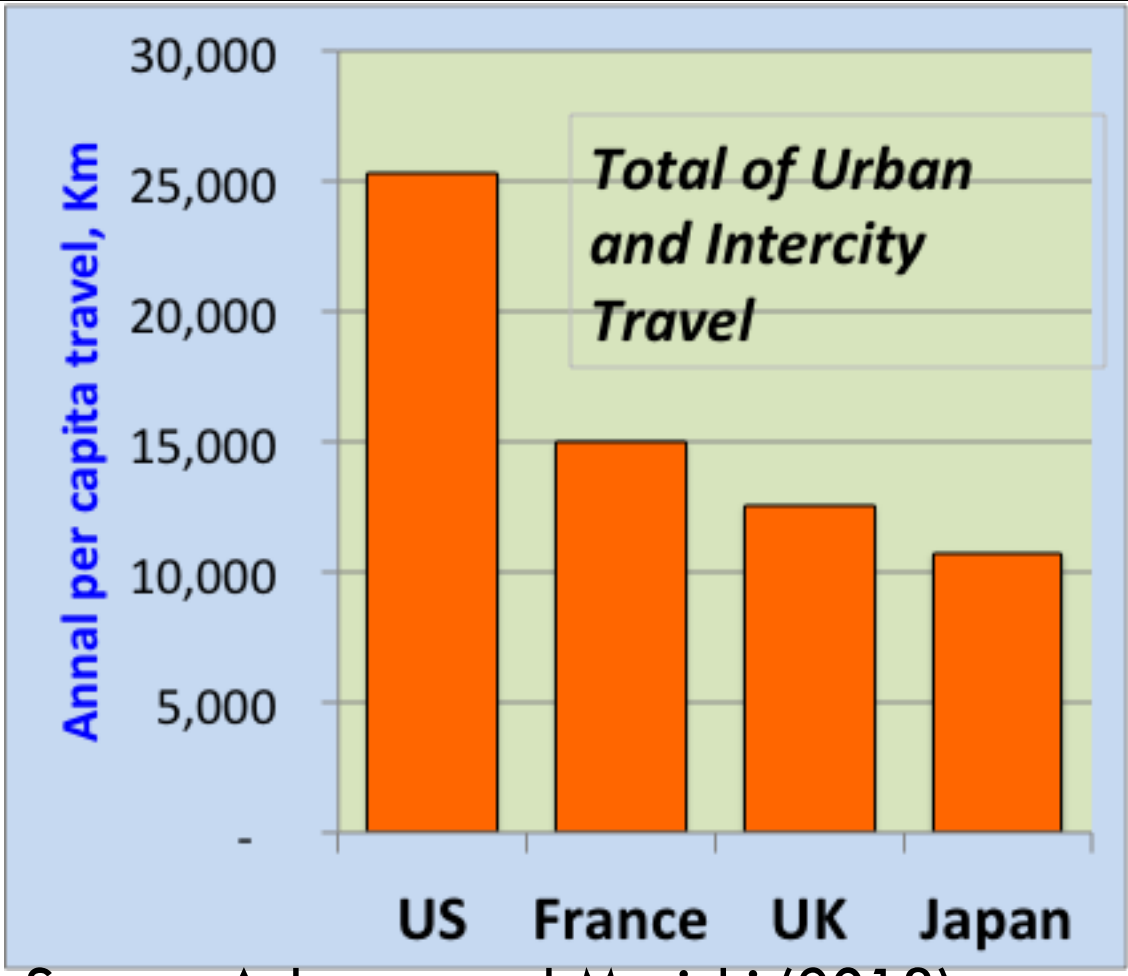
Transport Demand and Supply

Conventional Thinking

- **'Distance'** is a barrier for human interaction and socio-economic development
- Travel with efficient mobility- **good thing!**
- Supply-oriented policies

Per capita annul travel, Km (2010)



Source: Acharya and Morichi (2013)

Transport Demand and Supply

Modern Thinking

- Supply capacity alone cannot solve transport problems
- Travel is not a 'desire' in itself- it is a **'derived-demand'**
- Supply for 'managed' demand
- **Importance of TDM**

How to Manage Travel Demand?

Key Elements of Travel Demand Management (TDM)

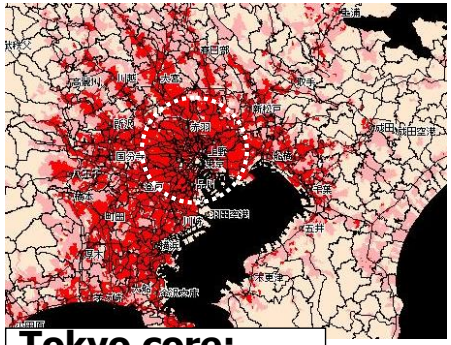
1. **How much travel demand?**
   - Reduce the need to travel
2. **Demand for what mode?**
   - Promote sustainable modes
3. **Demand for what time-of-day?**
   - Discourage peak-hour travel

1. Unnecessary Urban Travel

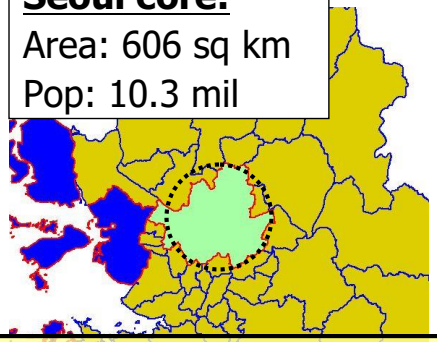
Due to inappropriate urban form

Mono-centric urban form in Asian cities is creating unnecessary higher demands.

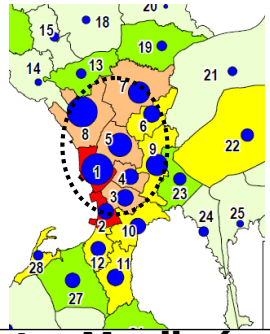
Mono-centric urban form in most Asian megacities



Tokyo core:
Area: 616 sq km
Pop: 8.1 mil

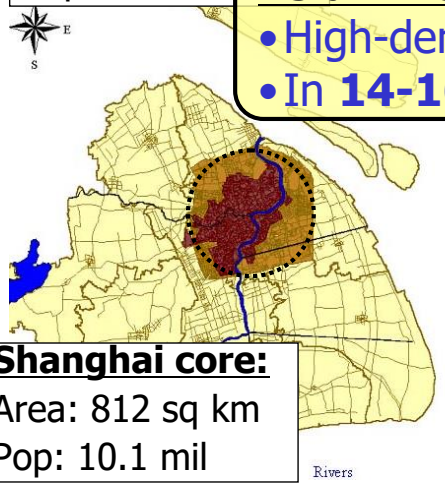


Seoul core:
Area: 606 sq km
Pop: 10.3 mil

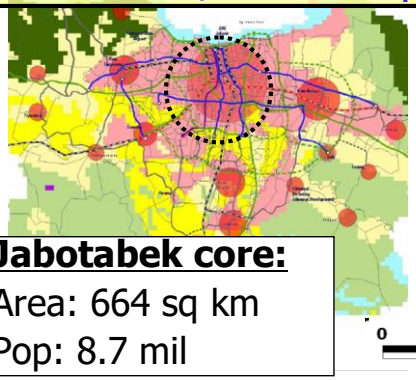


Metro Manila (core)
Area: 637 sq km
Pop: 10.1 mil

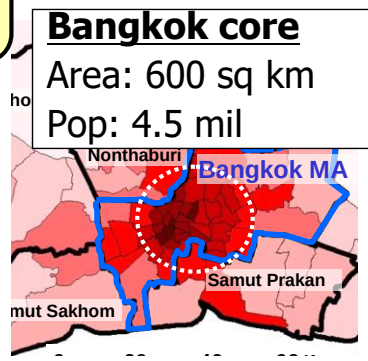
Asian Megacities:
- High-density core → Mono-centric
- In **14-16** km radius, 8-10 mil pop



Shanghai core:
Area: 812 sq km
Pop: 10.1 mil



Jabotabek core:
Area: 664 sq km
Pop: 8.7 mil

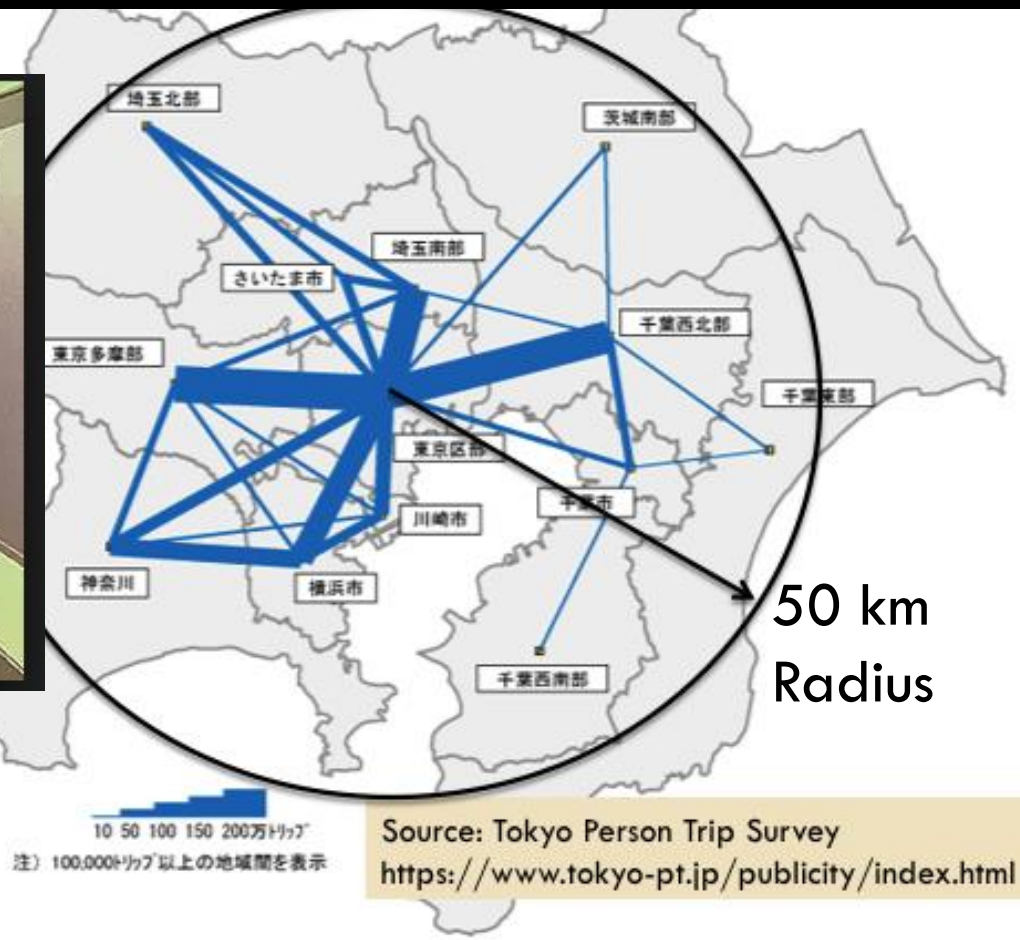


Bangkok core
Area: 600 sq km
Pop: 4.5 mil

1. Unnecessary Urban Travel

Mono-centric urban form creates longer trips

Passenger Flow in Tokyo Metropolitan Area

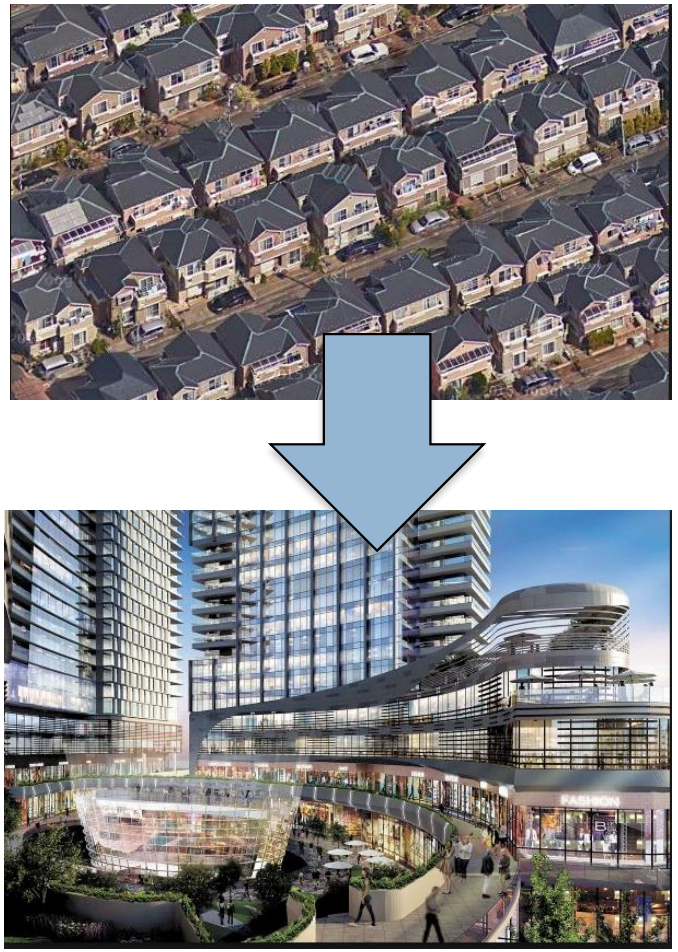


Source: Tokyo Person Trip Survey
https://www.tokyo-pt.jp/publicity/index.html

1. How to reduce the need to travel?

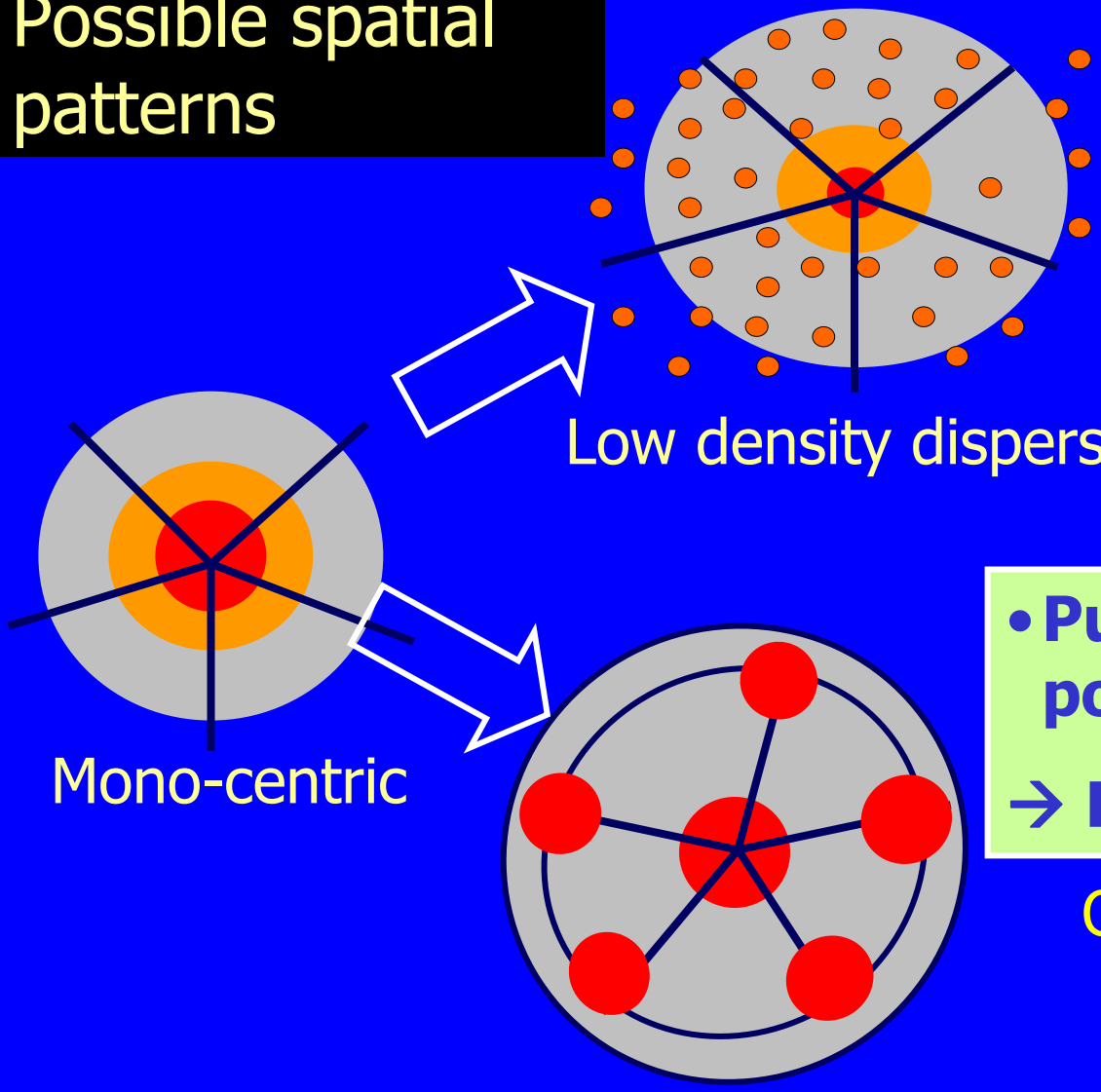
Appropriate urban planning and design

- **Avoid exclusive land-use zoning, promote mixed use**
- **Promote high density and compact city**
- **Concentrated decentralization (producing poly-centric urban form)**



Poly-centric urban form to reduce the need to travel

Possible spatial patterns



- **Car-oriented sprawl**

→ **Undesirable !**

- **Public-transport oriented poly-centric form**

→ **Desirable!**

Or Transit corridor with weak centers

BUSINESS INSIDER

China Is Building A Huge Eco-City Where No One Will Need To Drive

Alex Davies Nov. 2, 2012, 7:15 AM

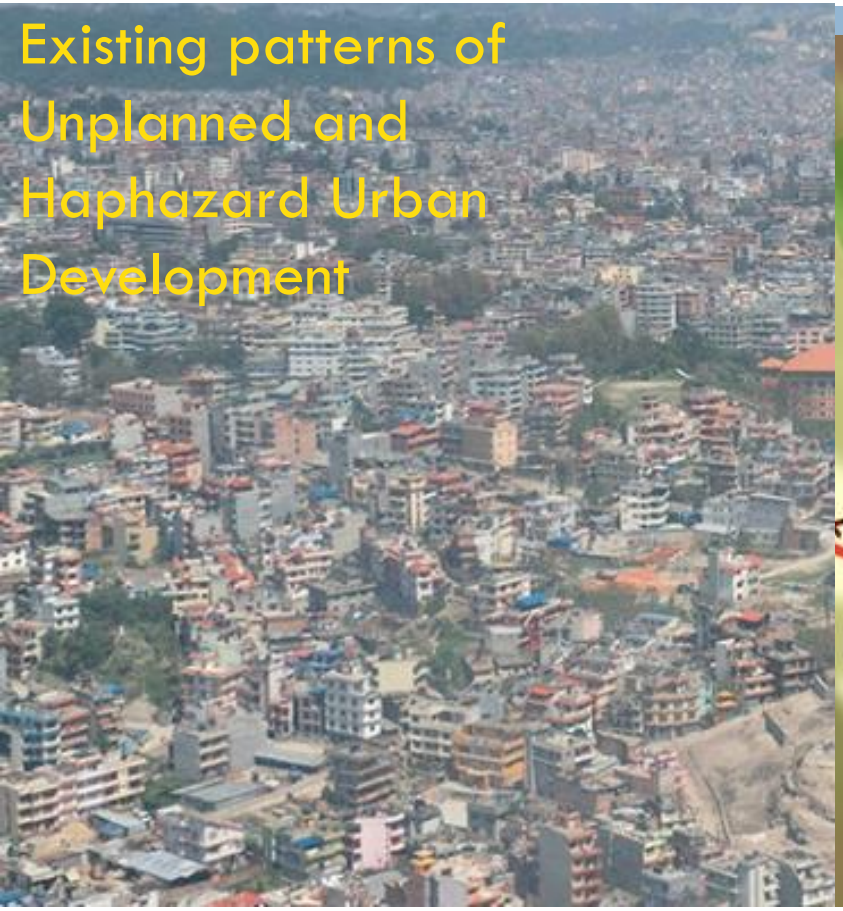
Outside Chengdu, in central

© Adrian Smith + Gordon Gill Architecture

'Great City'- Chengdu (planned)

New Town Development in Kathmandu, Nepal

Compact and Smart City Concept



2. Generate Demand for Sustainable Modes

Public Transport and Non-Motorized modes

1. Provision of mass transit (MRT, BRT, Bus)
   - Investment, Institution, Management
2. Infrastructure for non-motorized transport
   - Walkway and bicycle lanes
3. Transit-oriented development (TOD)
   - To make mass-transit feasible/competitive
4. Transfer facilities for better integration
   - Innovative urban design
5. Control on private vehicles and car-sharing
   - Car quota in Singapore, Beijing and Shanghai

Developed Asian cities are known for successful TOD

Tokyo, Osaka, Seoul, Hong Kong, Singapore

Roppongi Hill in Tokyo

Transit-oriented Urban Reneration

Tanjong Pagar MRT Station, Singapore

Many Developing Asian cities introducing MRT, BRT

Skytrain in Bangkok

BRT in Jakarta

MRT system in Manila, Bangkok, Delhi (under operation) Jakarta, Hanoi, Hochiminh City (opening soon) and other cities.

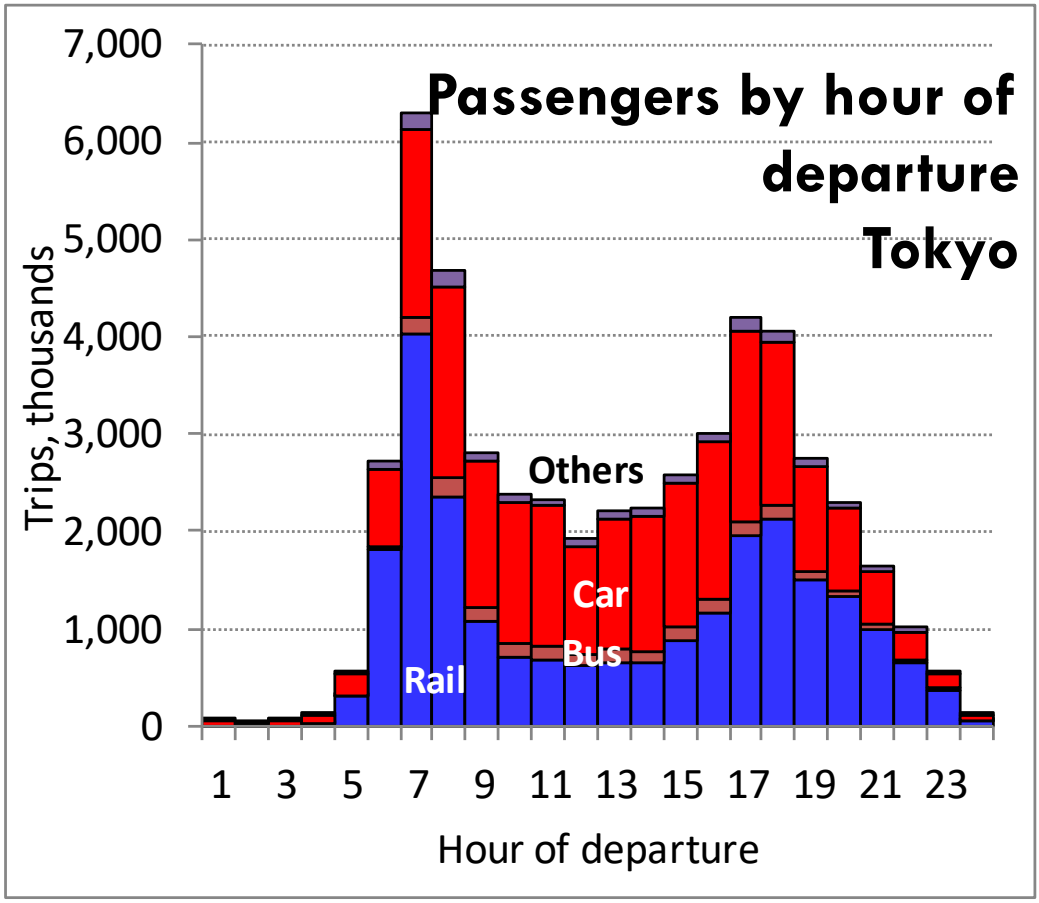
Transit stations and pedestrian facilities

Station Plaza, Japan

Pedestrian arcade

3. Reduce Peak-hour travel demand

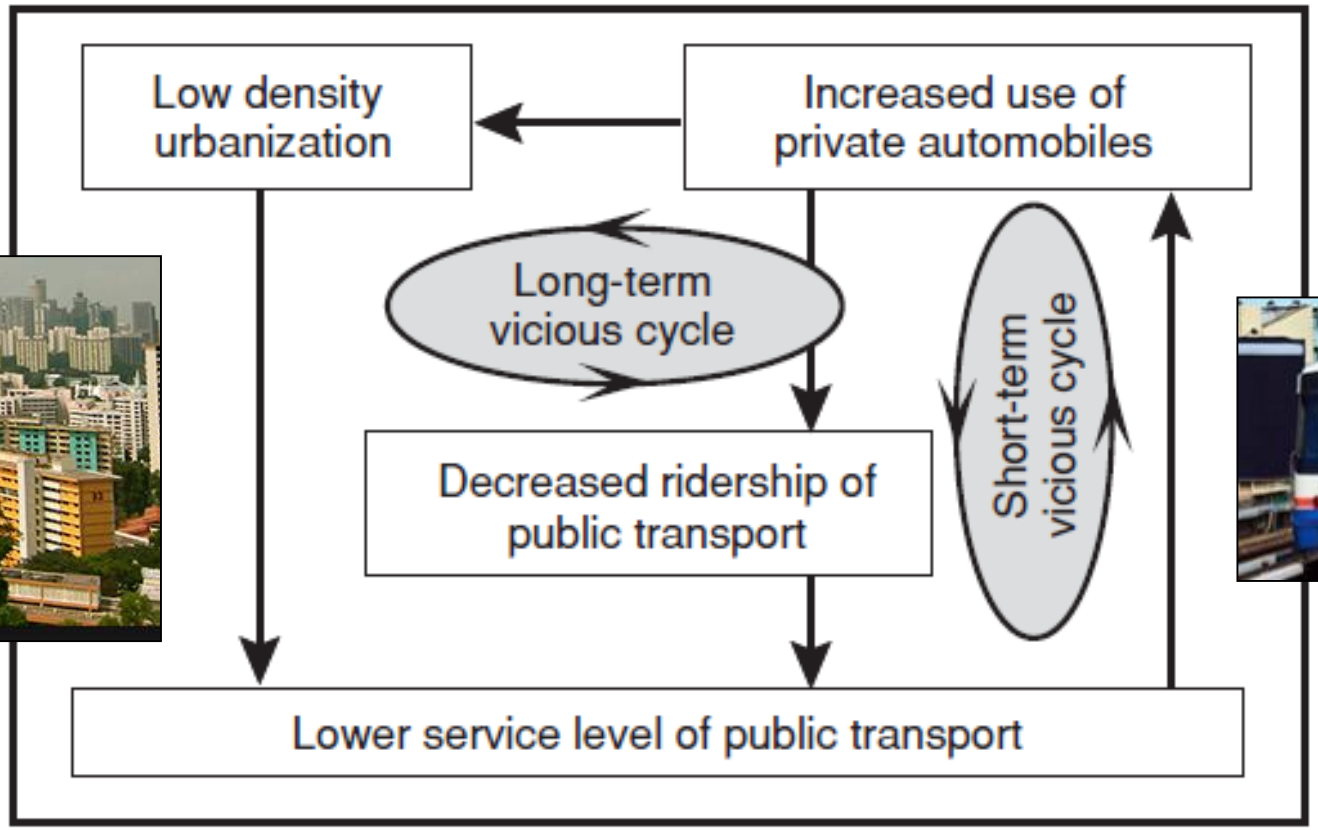
- Reduce commuting trips through tele-commuting (use of ICT)
- Spread peak through flexible office hour



Data Source: Tokyo Person Trip Survey

Urban transport dynamics

Turning Vicious cycles into Virtuous Cycle, How?



Source: Acharya and Morichi (2007)

Game-changer TDM measures are the answer!

Thank you!

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