

## **Parking organisation and sustainability**

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20 August 2010



Source: <http://a-glaswegian.blogspot.com>



## Current situation in Bangkok



Source: <http://drivedd.blogspot.com>

**Figure 1.** *The push-and-pull approach towards less car traffic in urban areas*

#### Measures with push-effects

Area-wide parking management, parking space restrictions in zoning ordinances, car limited zones, permanent or time-of-day car bans, congestion management, speed reductions, road pricing...

#### Measures with pull-effects

Priority for buses and trams, high service frequency, passenger friendly stops and surroundings, more comfort, park-and-ride, bike-and-ride..., area-wide cycle-networks, attractive pedestrian connections...



#### Measures with push- and pull-effects

Redistribution of carriageway space to provide cycle lanes, broader sidewalks, planting strips, bus lanes..., redistribution of time-cycles at traffic lights in favour of public transport and non-motorized modes, public-awareness-concepts, citizens' participation and marketing, enforcement and penalizing...

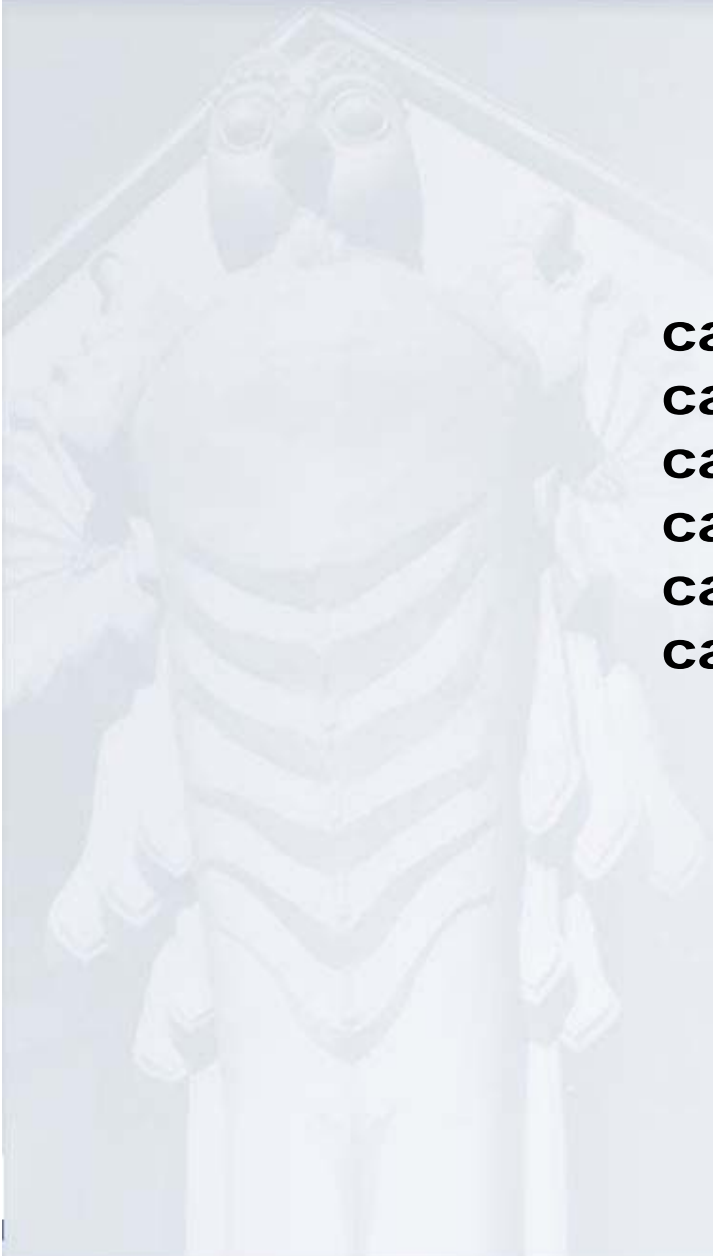
*Source: Müller et al. (1992)*



## Effect of parking scheme

- Munich 1982: Reduce car solo driver from 44% to 32%
- Salzburg 1989: Car traffic reduce by 5.5%
- Kaiserslautern 1992: Reduce car solo driver from 62% to 58%
- Windsor 2002: shifting long term parking away from city centre
- Bangkok ?



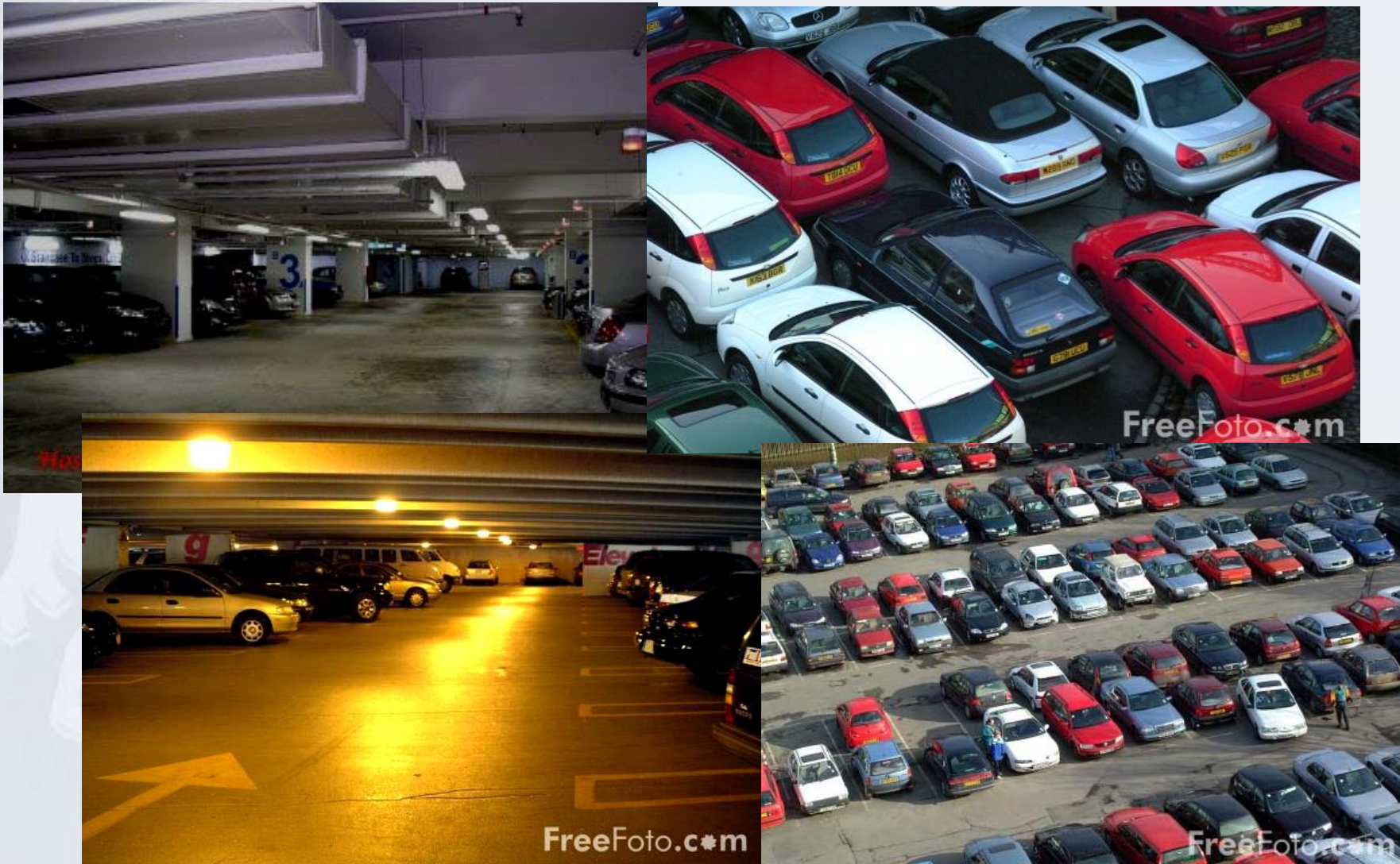
A faint, light-colored background image of a person wearing a large, white, textured costume that resembles a bee or a similar insect. The person is standing in a room with a wooden floor and a white wall. The image is semi-transparent and serves as a background for the text.

car car car car car car car car  
car car car car car car car car  
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Car parks,  
as a space,  
offer very little poetry

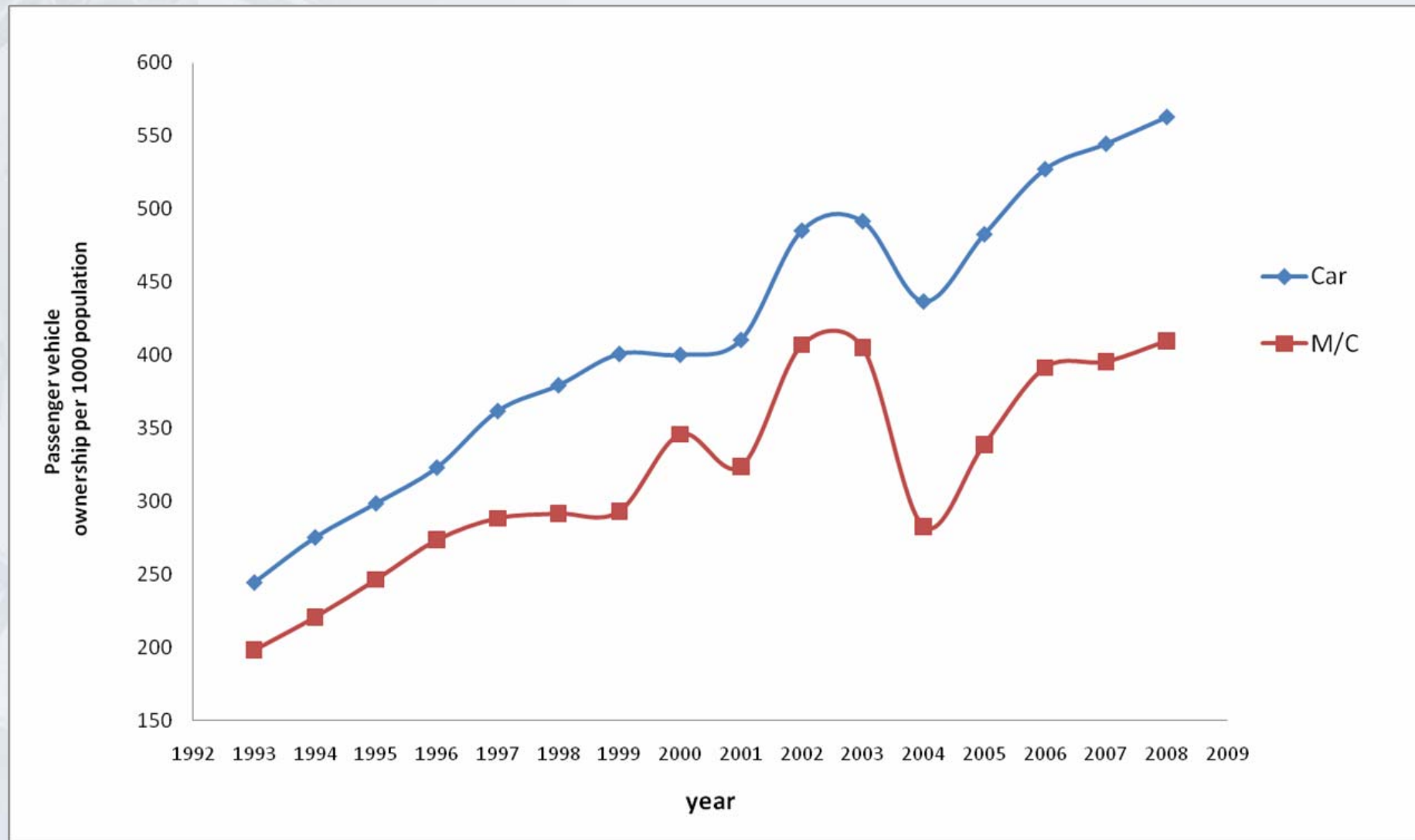
Source: <http://a-glaswegian.blogspot.com>

- Bad condition of parking space / use





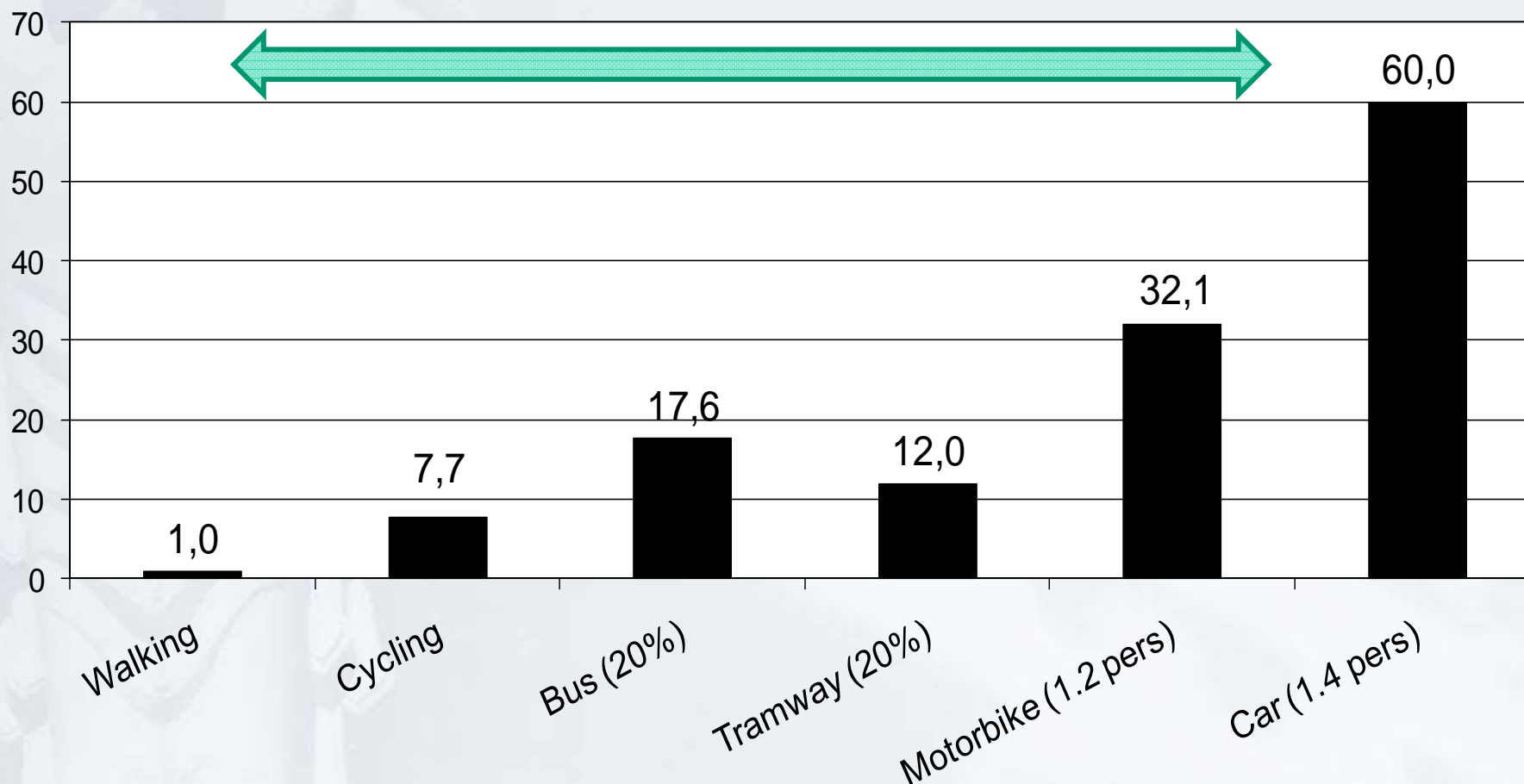
## Rise in Bangkok motorisation





## Comparison space consumptions

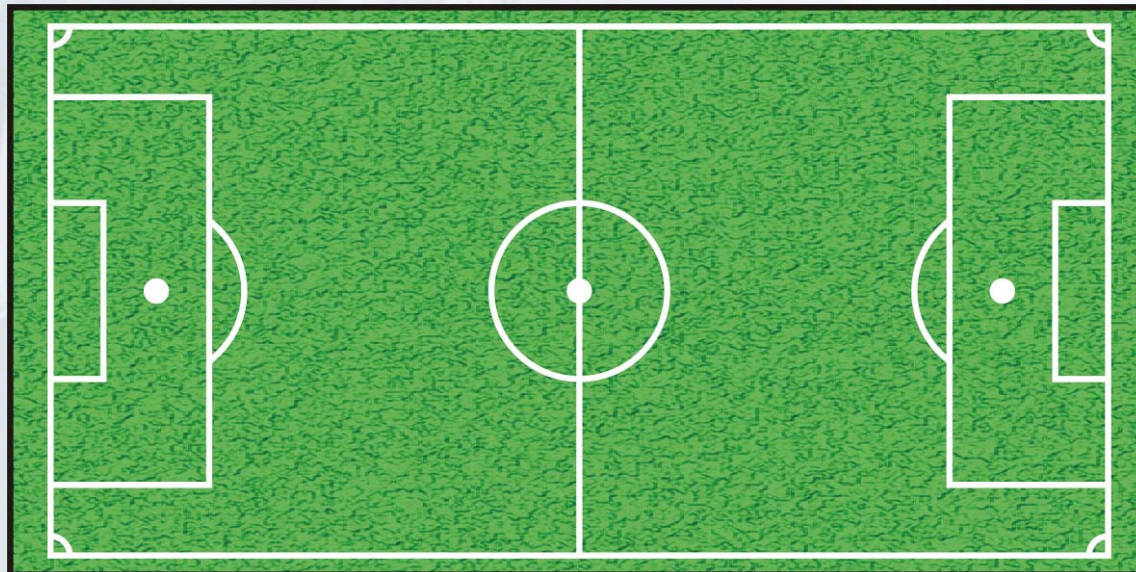
Area consumption [m<sup>2</sup>/person]



Source: Pfaffenbichler, P. (2001). "Verkehrsmittel und Strukturen." Wissenschaft & Umwelt Interdisziplinär(3), 35-42., own additional calculations

## Urban space lost

- Average growth of private vehicle in Bangkok 1999-2009:
  - Motorcycle – 73,000 per year
  - Car – 112,000 per year
- Equivalent to loss of urban space for parking 1.5 km<sup>2</sup> per year



**X 200**





*PARK(ing) Day NYC 2007*



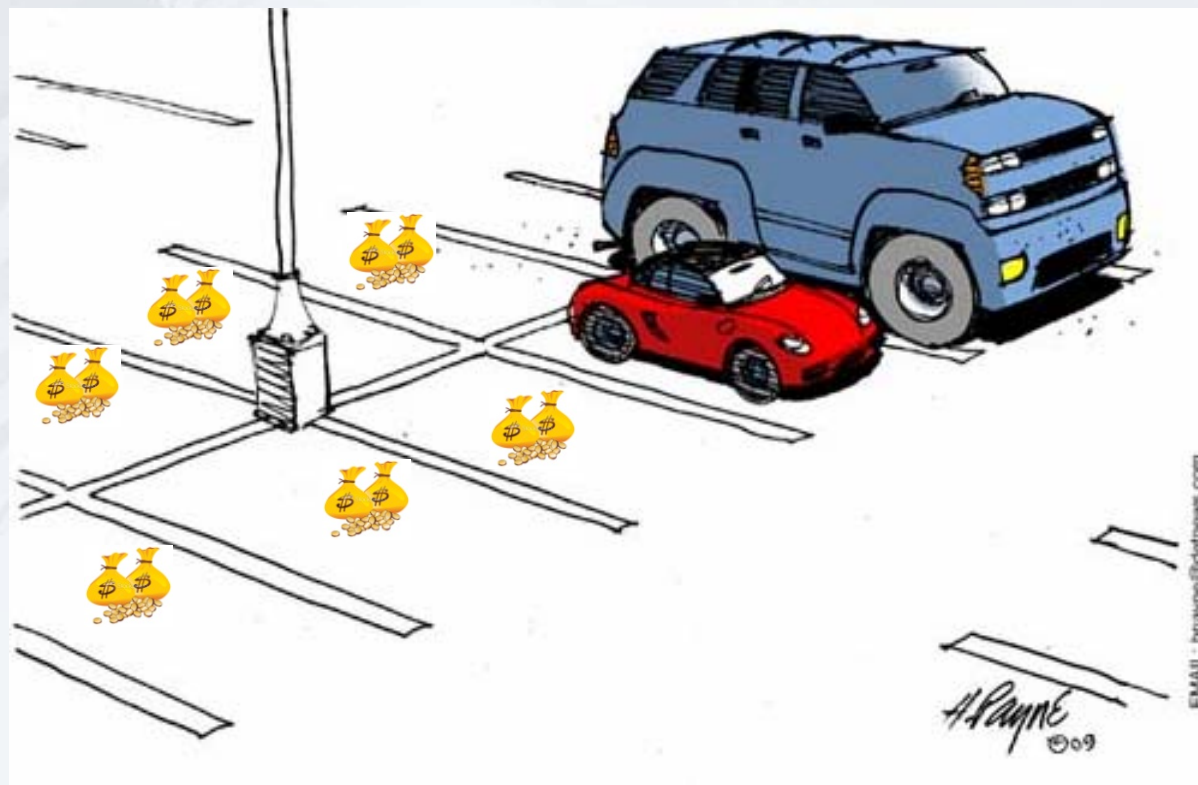
## Economic and social benefit from a car-free street



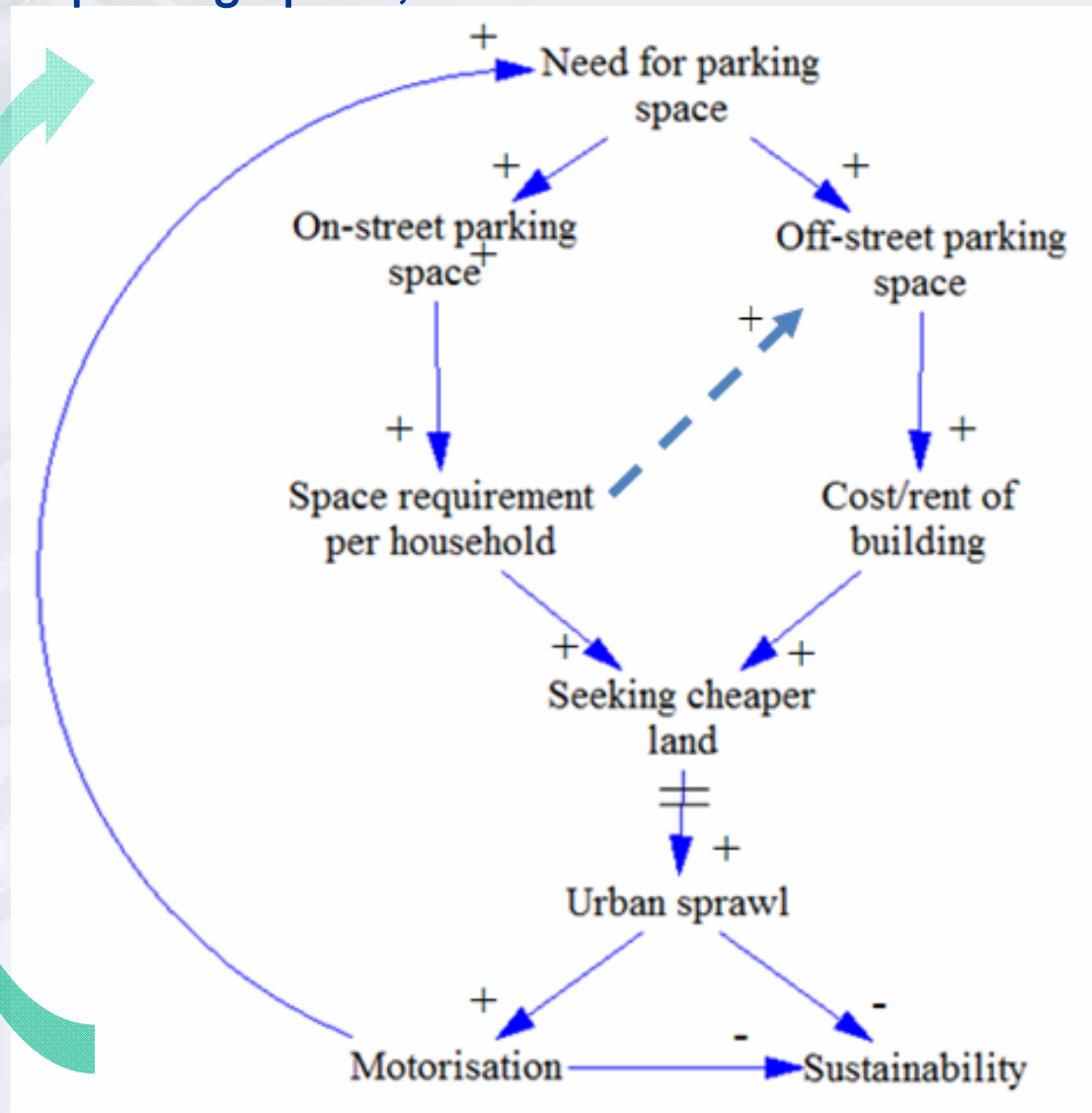


## Parking add cost to building

- 10% per parking space – San Francisco (Jia and Wachs, 1996 ).
- 12.5% for the first parking provided and 25% for the provision (Litman, 1995)



Causal Loop Diagramming shows Overall system relationships between provision of parking space, motorisation and sustainability of a city





## Minimum parking space requirement



- Ensure sufficient parking for private vehicle usage
- Estimated value based on the past
  - Type of building
  - Activity
  - Peak demand
- Free or low cost parking

Bangkok's regulation is 1974 with  
1994 addendum

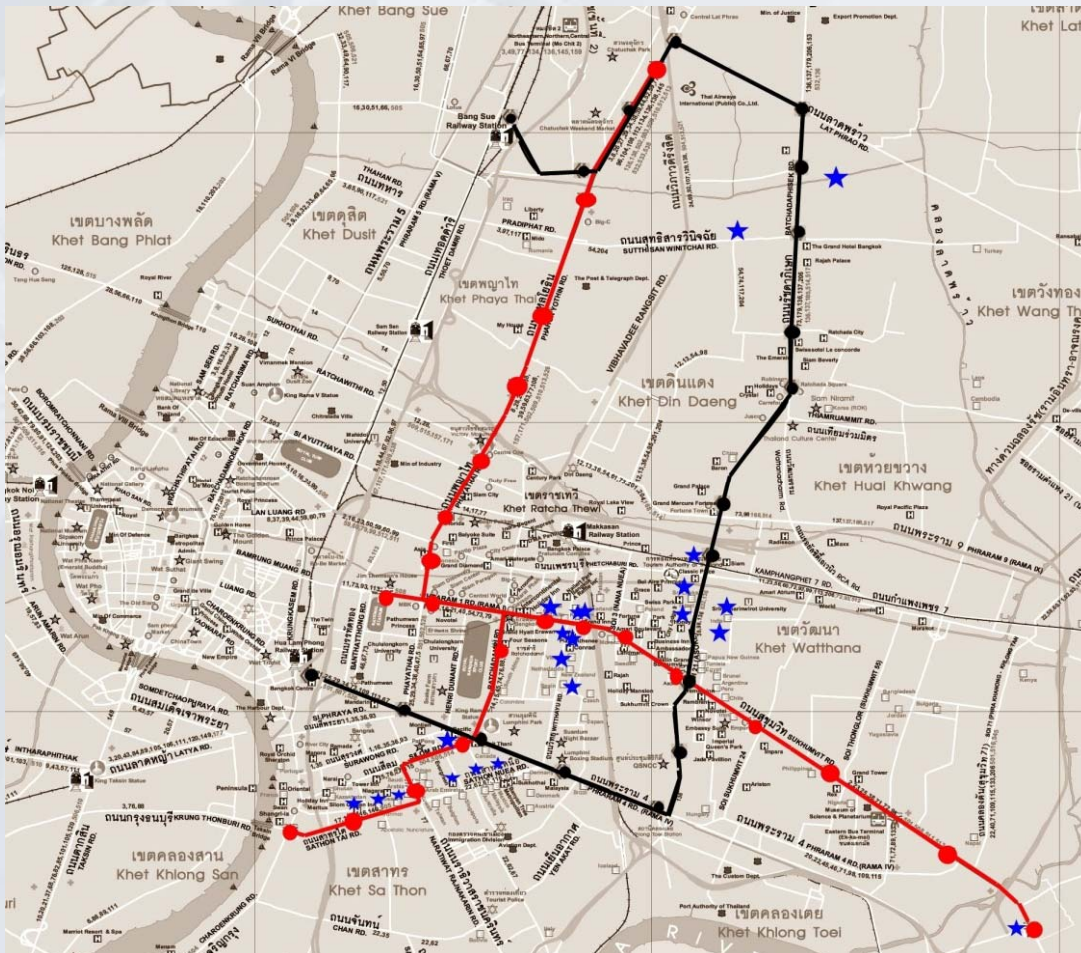
## Effect of minimum parking space requirement: Hong Kong



- The 2nd Parking Demand study report (2002)
    - 82,000 night time parking spaces surplus.
    - 98,200 day-time parking space surplus
  - Recommendations:
    - Abolished zoning base parking space requirement
    - Global zoning base rate, using Demand and Accessibility Adjustments
- But still Minimum parking space requirement !**



## Effect of minimum parking space requirement: Bangkok



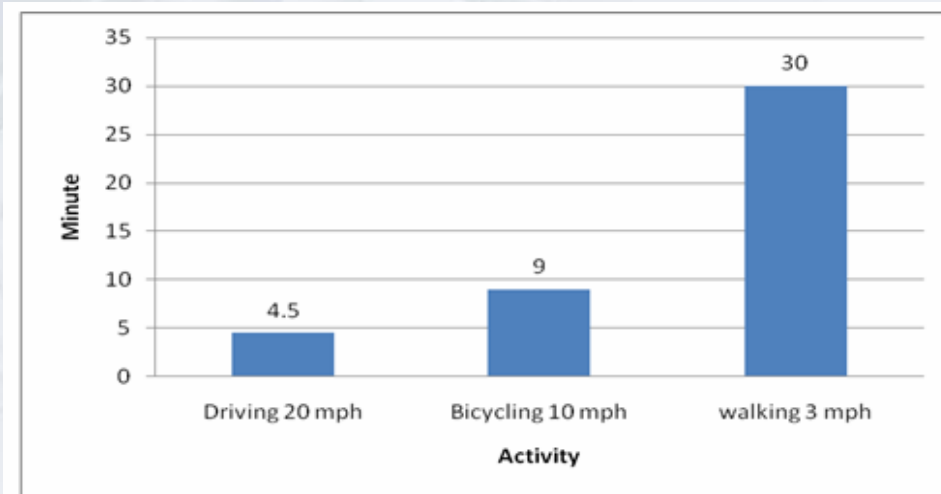
- Desktop Analysis based on data of 21 offices located within Bangkok CBD
  - Minimum parking space requirement 1 space : 60 sq m
- Key Finding:**
- Average of 58 spaces exceeded per building
  - 17% above minimum requirement

## Equi-distance parking concept

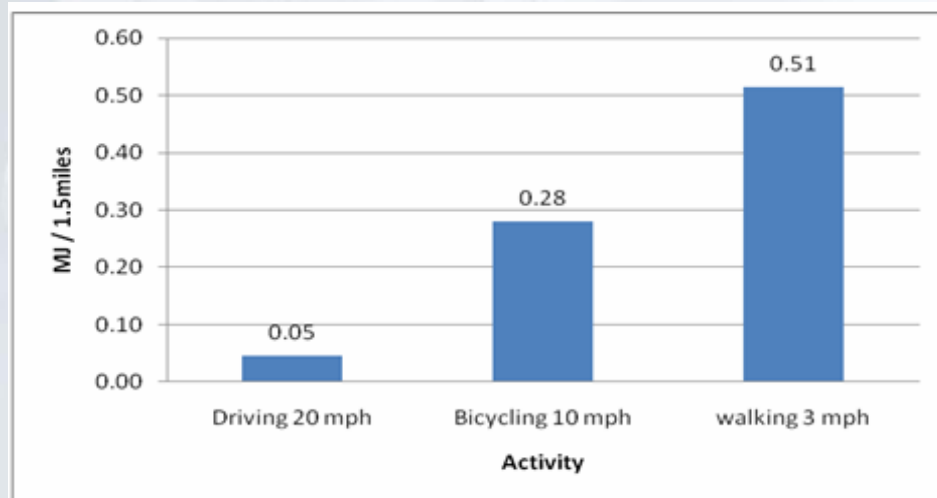
- Energy consumption
- Structure influence behaviour
- Existing parking organisation
- Equi-distance parking

## Energy Consumption

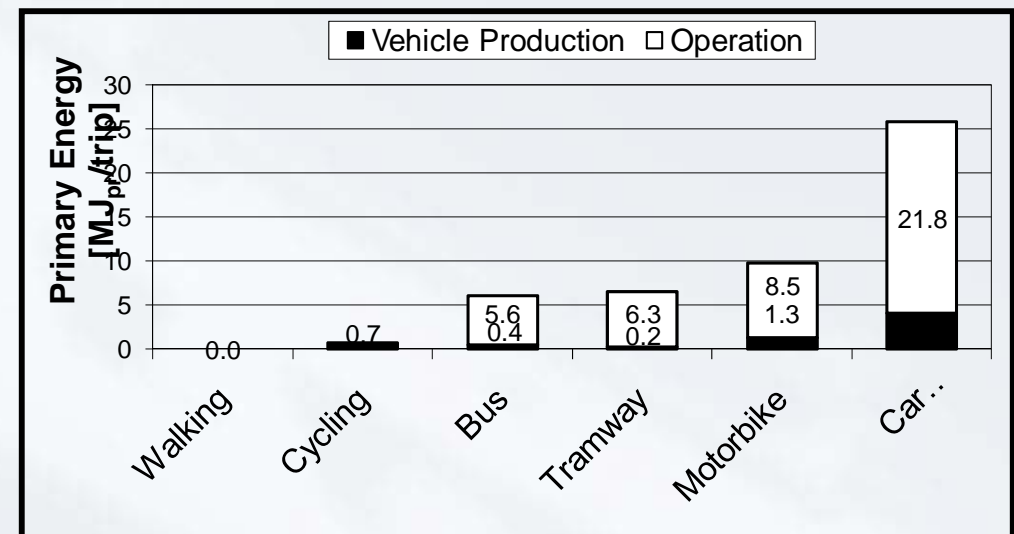
Time



Internal energy



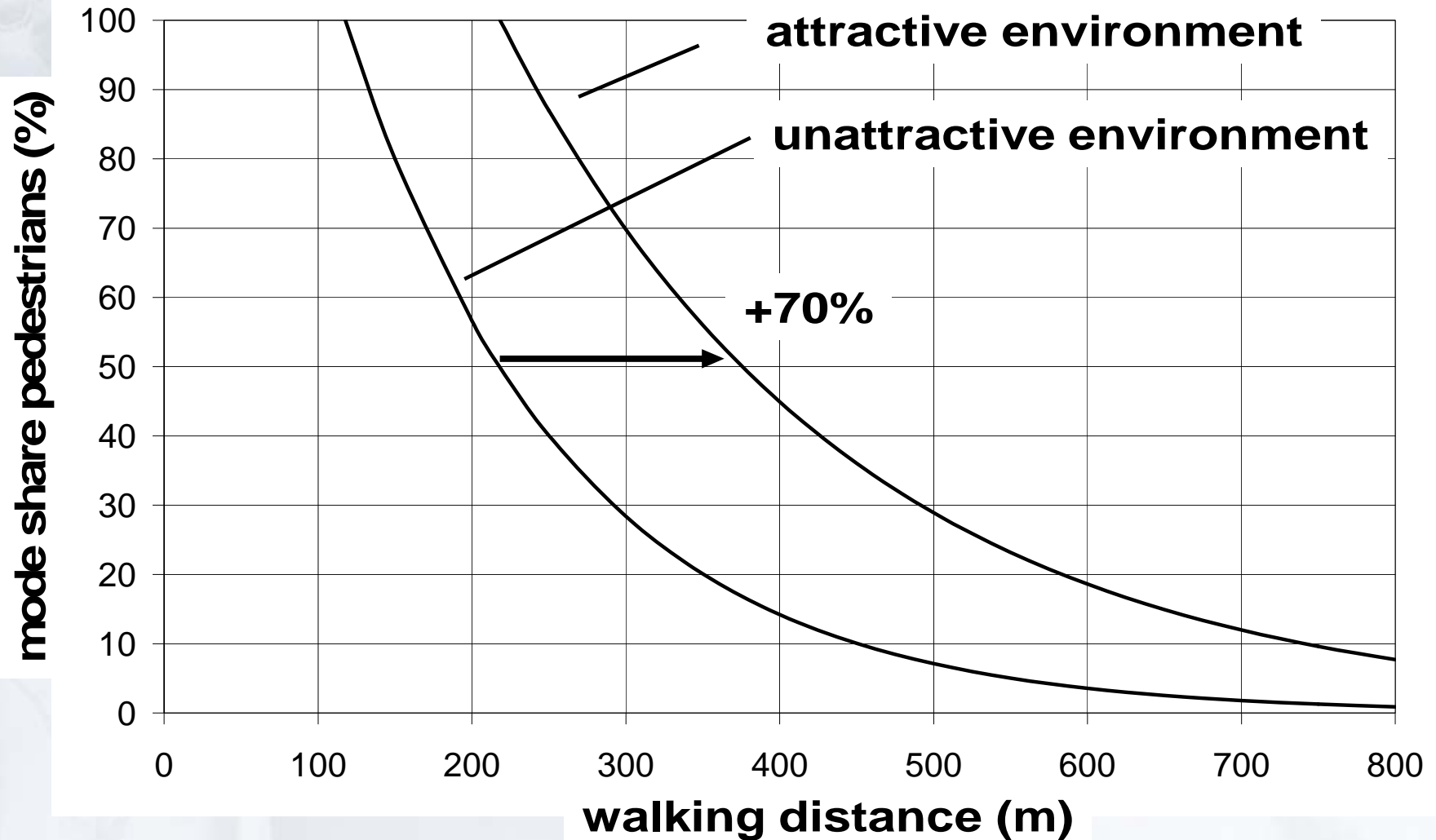
External energy



Source: Pfaffenbichler, P. C. (2001). "Verkehrsmittel und Strukturen." Wissenschaft & Umwelt INTERDISZIPLINÄR(3): 35-41.



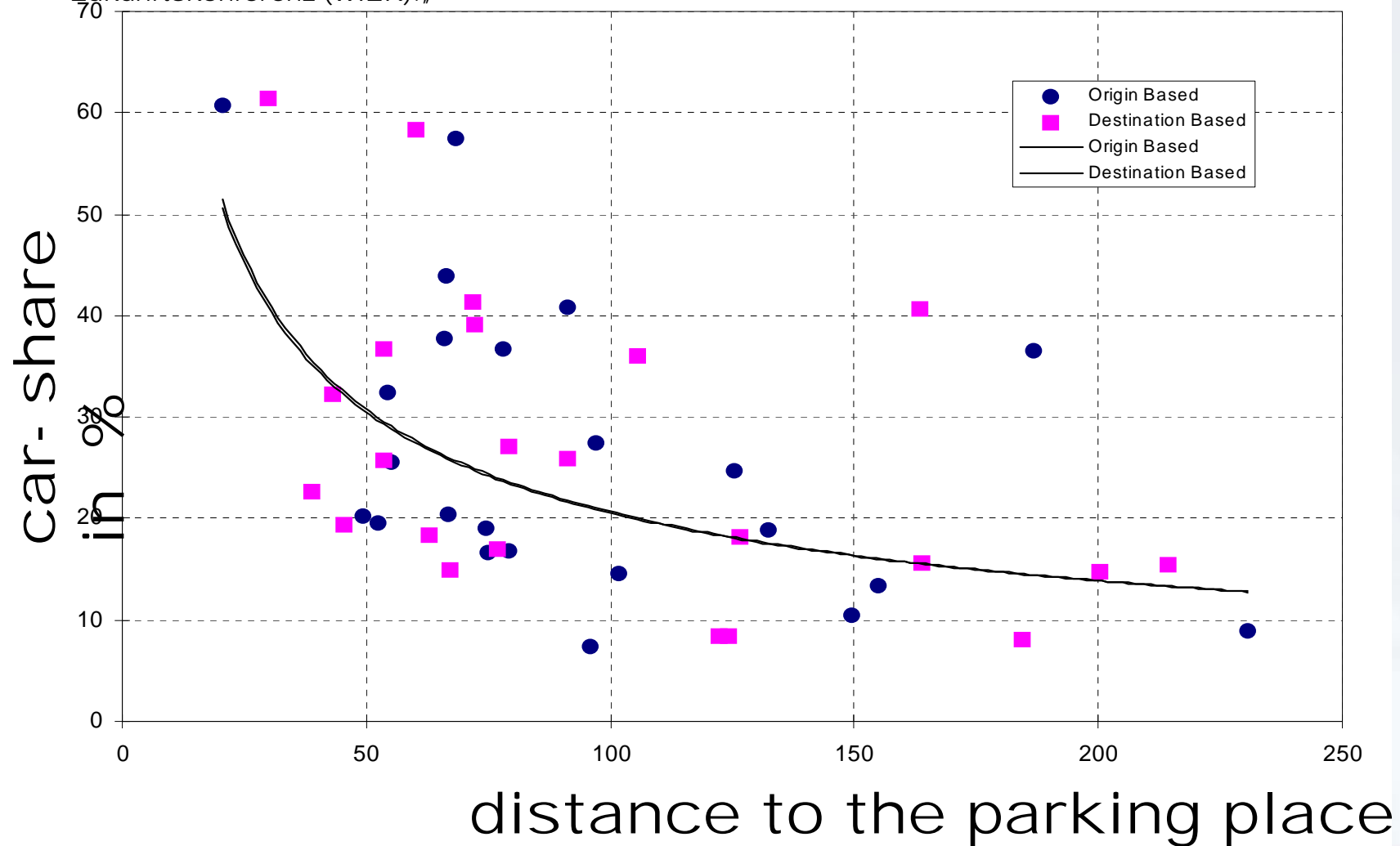
## Structure and behaviour



source: Peperna, O. (1982). "Die Einzugsbereiche von Haltestellen öffentlicher Nahverkehrsmittel im Straßenbahn- und Busverkehr," Master thesis, Technische Universität Wien

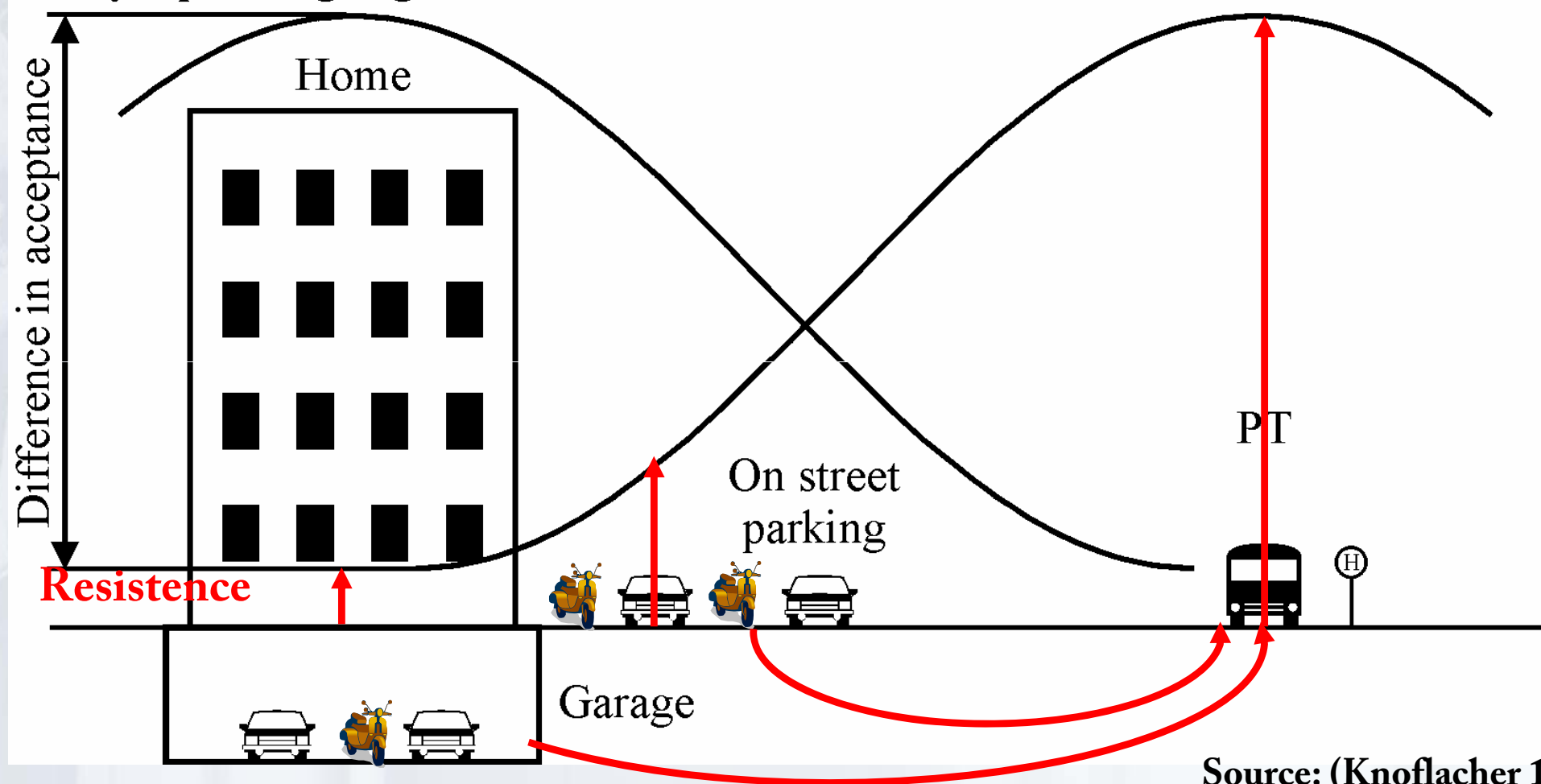
## Car share

Source: Emberger, G., and Knoflacher, H. (1995). "Sustainable Development - Öko-City, Projektgruppe 1: "Mobilität in der Stadt" (Stadt und Verkehr). Band 3: Mobilitätsverhalten der Wiener Bevölkerung. Durchgeführt im Auftrag der Wiener Internationalen Zukunftskonferenz (WIZK)."



## Existing parking organisation

### Today's parking regulation



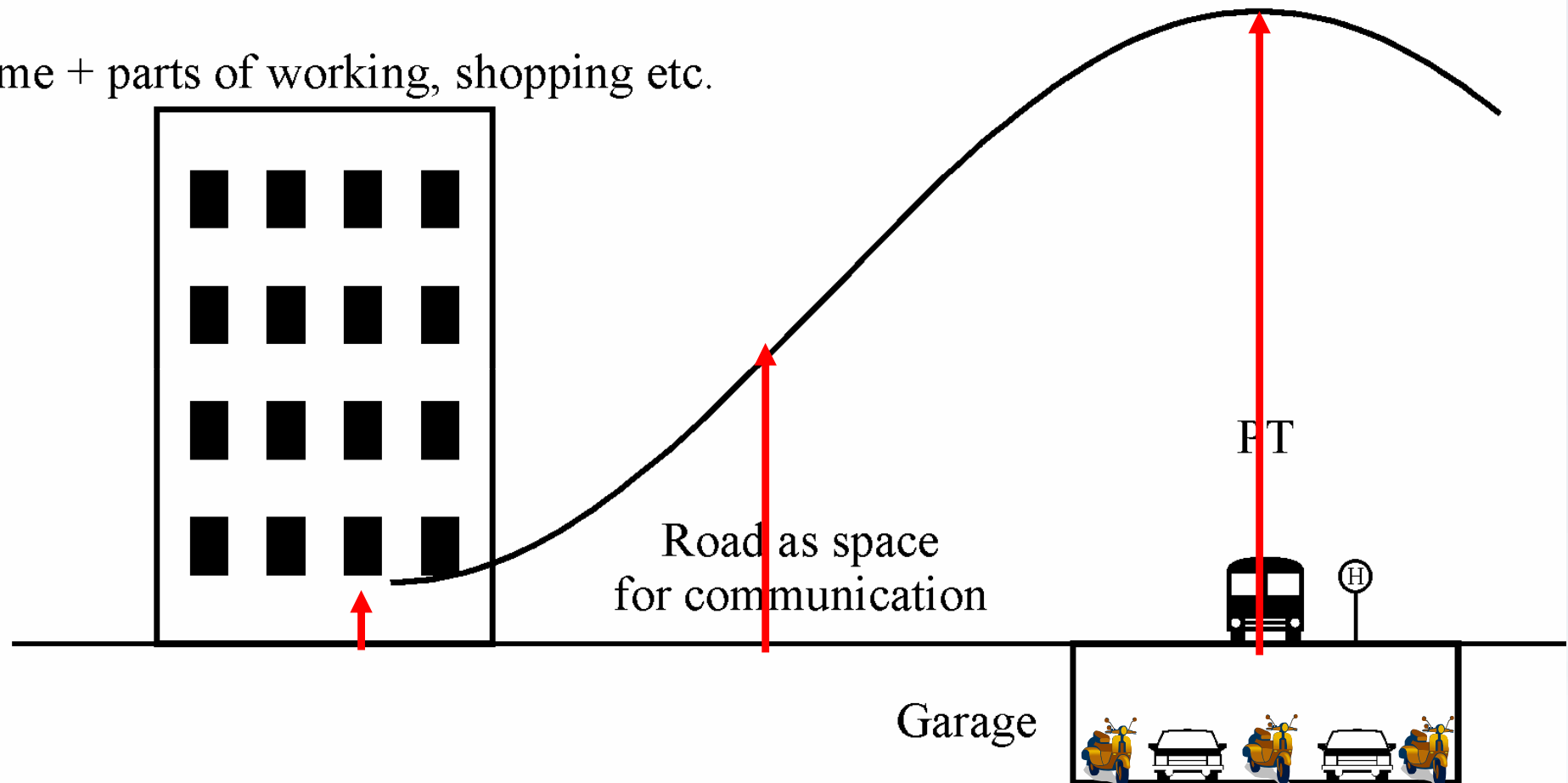
Source: (Knoflacher 1980)



## Equi-distance parking organisation

### The basic solution

Home + parts of working, shopping etc.



Source: (Knoflacher 1980)

## Conclusion

- Parking organisation is an effective 'push' measures
- Increase in motorisation leads to increase in space use for parking in city
- Provision of parking space influence motorisation and sustainability
- Minimum requirement parking space policy leads to provision of surplus parking space

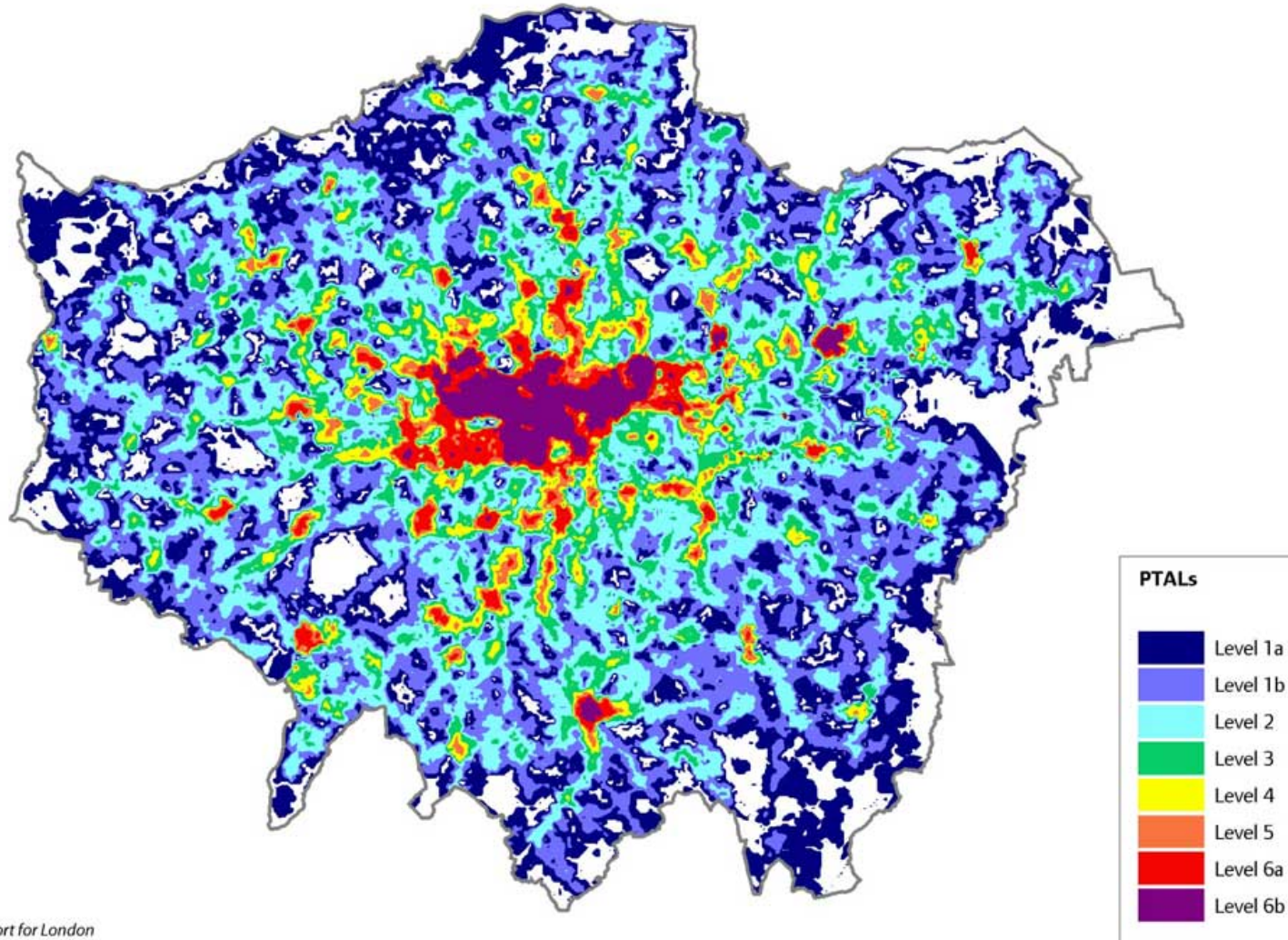
## Recommendation

- Abolish minimum parking space policy for maximum allowable that take in account of Public transport accessibility level
- Provide structural change that will influence desirable behaviour change



## Public Transport Accessibility Level (PTAL), London

Access to public transport



source Transport for London

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Diagram: GLA, The London Plan - consolidated with alterations since 2004 (2008)  
[www.london.gov.uk/thelondonplan](http://www.london.gov.uk/thelondonplan)

Where is the solution?





**Thank you very much for your attention!**

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