

Future Challenges and Solutions in Traffic Management



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Final Project Symposium TEMPUS III JEP Project: „IREITEU“
Intergration of Road Engineering IT-Technologies at Egyptian Universities

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Structure

- Introduction
- Bus Priority Measure under Heterogeneous Traffic Condition
- Parking Management Scheme for Private Car Parks
- Conclusion

Definition

Traffic management =

*Influencing of traffic (flow) and transport
with operational measures based on
defined goals*

(without major infrastructure measures
→ high cost-effectiveness)

Types of Traffic Management Measures

- Traffic management of traffic infrastructure (with and without ITS)
- Travel information service
- Mobility management for firms and companies
- Travel behaviour change program
- etc.

Goal of Traffic Management Measures

Influencing traffic to

- improve the environment
- promote the economic development
- achieve a high social standard for the whole population

sustainable
transport
development

→ Need of suitable evaluation tool
(SDA = **S**ustainable **D**evelopment **A**nalysis)

Example 1

Bus Priority Measure under Heterogeneous Traffic Condition

Results of phd-thesis
of P. Vedagiri, Madras

The Problem

- Congested arterial roads in conurbation
- no space for widening
no sense of widening
- Two principle alternatives

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graph TD; A[Two principle alternatives] --> B[underground railway]; A --> C[new distribution of road space];
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underground
railway

new distribution
of road space

Lane-Based Homogeneous Traffic Flow



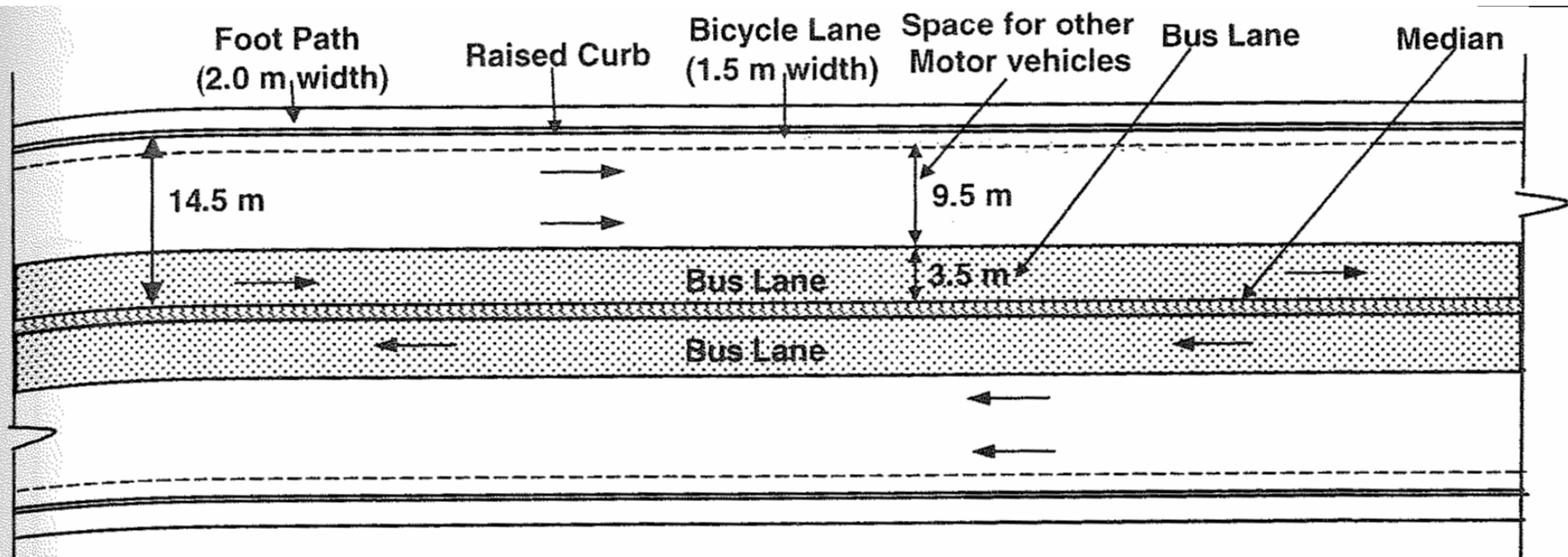
Vedagiri 2009

Non-Lane-Based Heterogeneous Traffic Flow

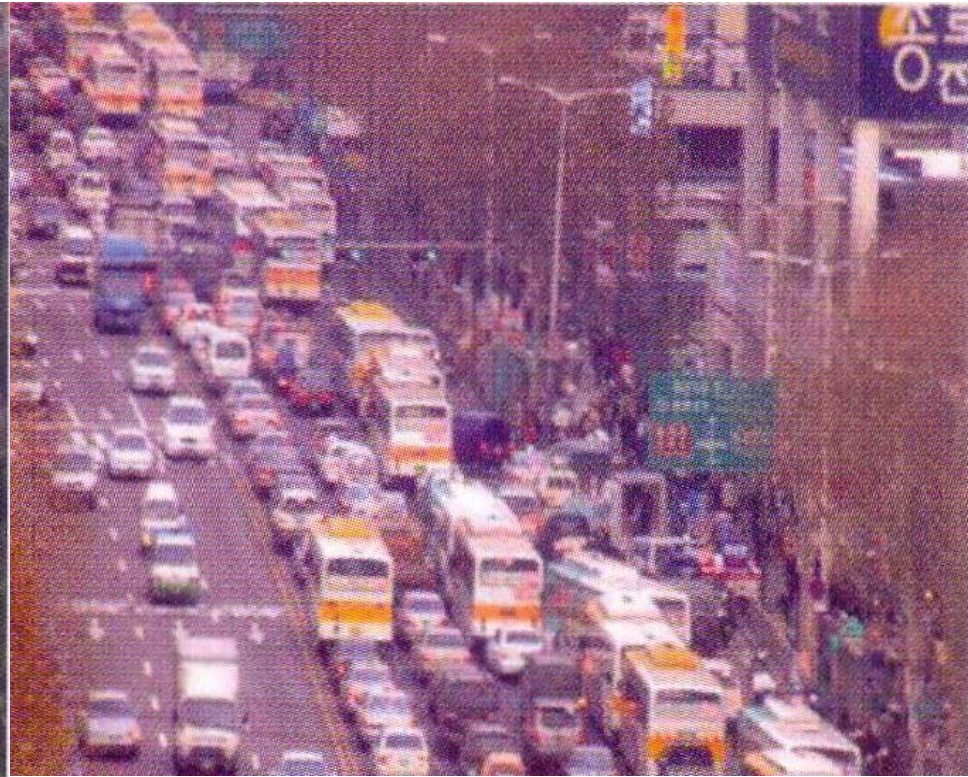


Vedagiri 2009

Bus Lane for 14.5 m Wide Urban Road (Dual Carriage Way)

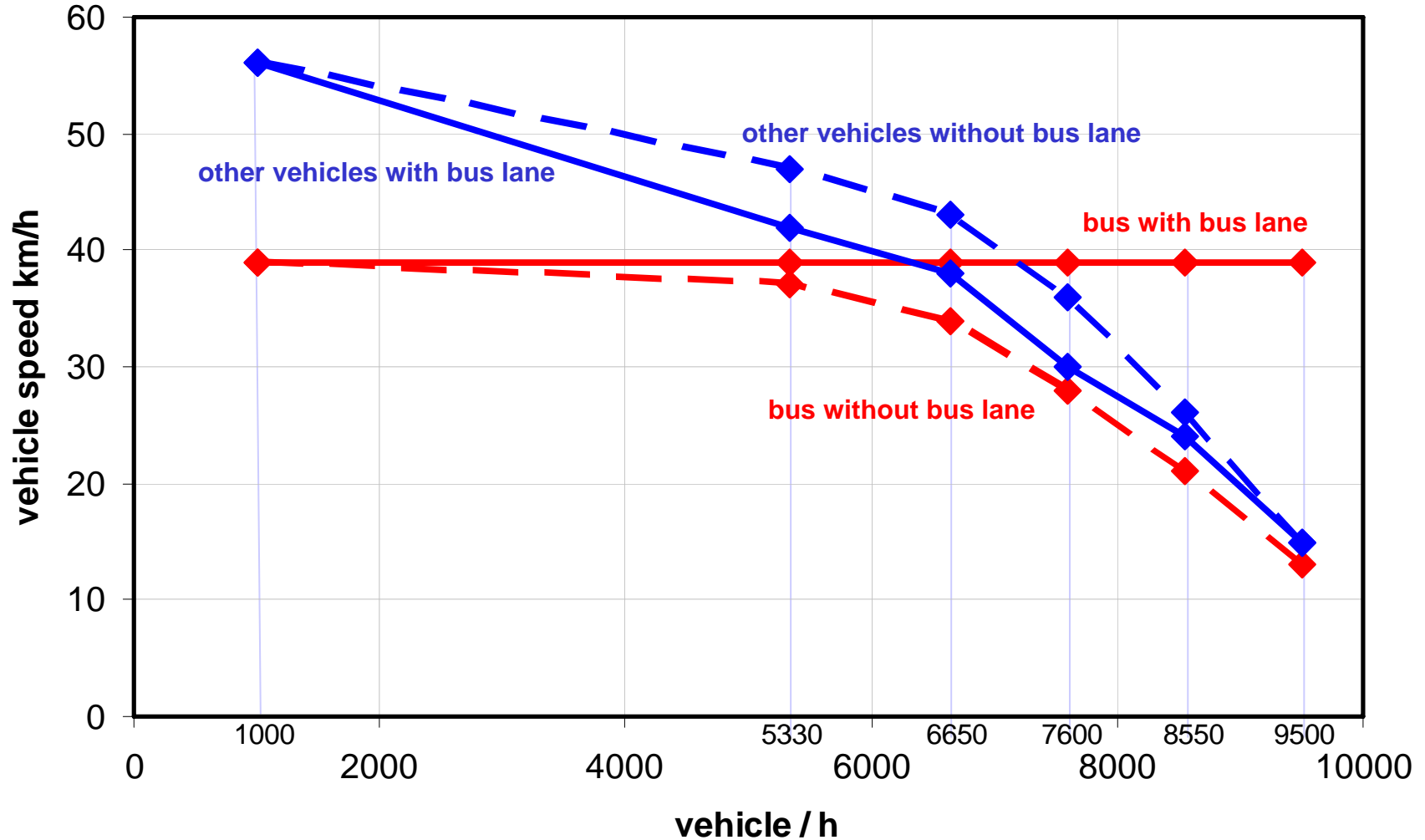


Example Bus Lane with Bus Stop in Seoul

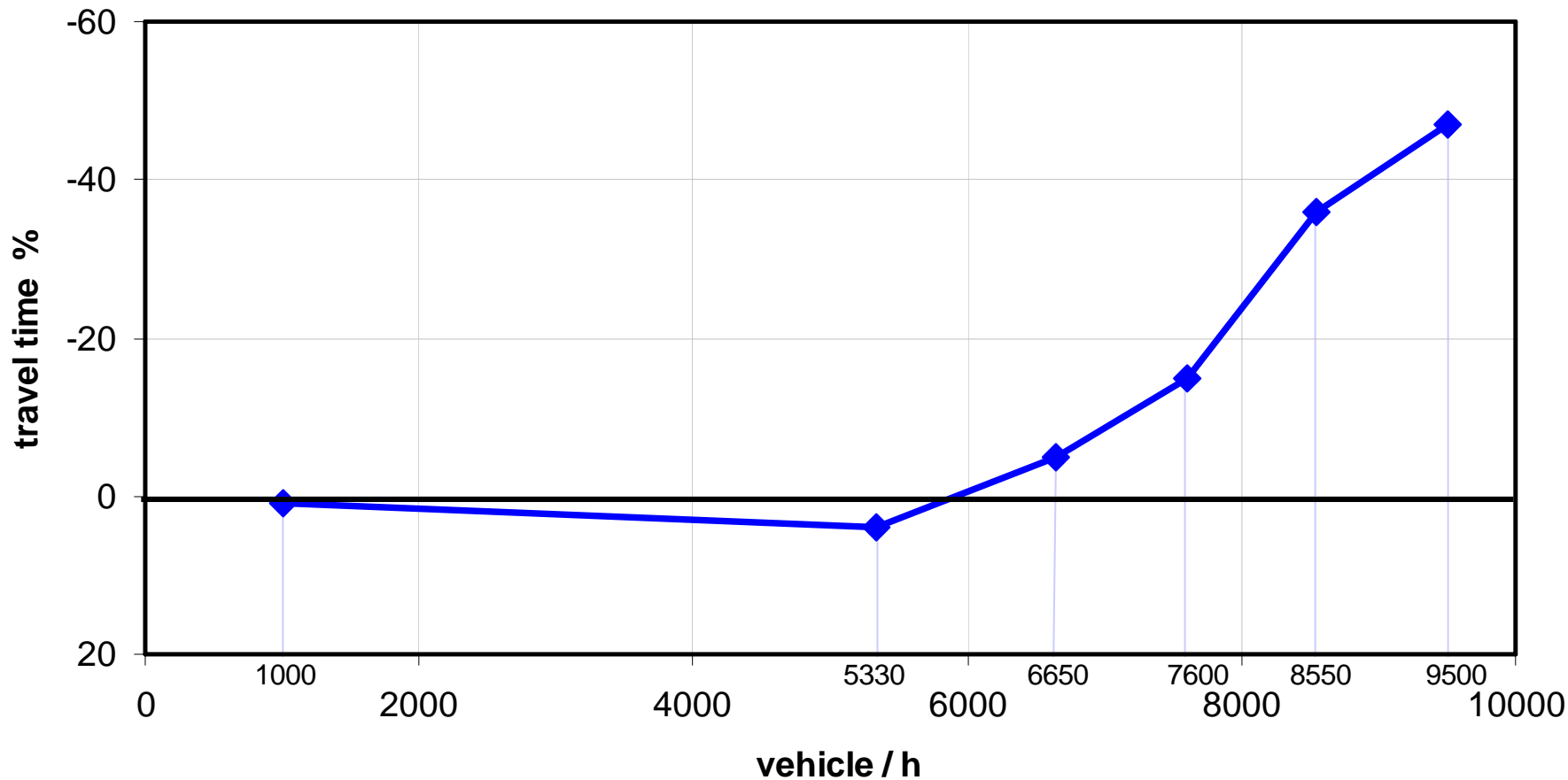


Speed of Bus and Other Vehicles

With and Without Bus Lane, Road-width 14.5 m



Travel Time Saving of Bus and Other Vehicle Users in Comparison With and Without Bus Lane, Road-width 14.5 m



Example 2

Parking Management Scheme for Private Car Parks

Results of a Research Study for
the Vienna Region
ITS, BOKU

The Problem

- ➔ Parking management and paid parking zones in public space → very efficient traffic management measure
- ➔ Problem: increasing number of private parking slots → commuter car parks, car parks of shopping centres etc.

➔ Two options of solution

congestion pricing

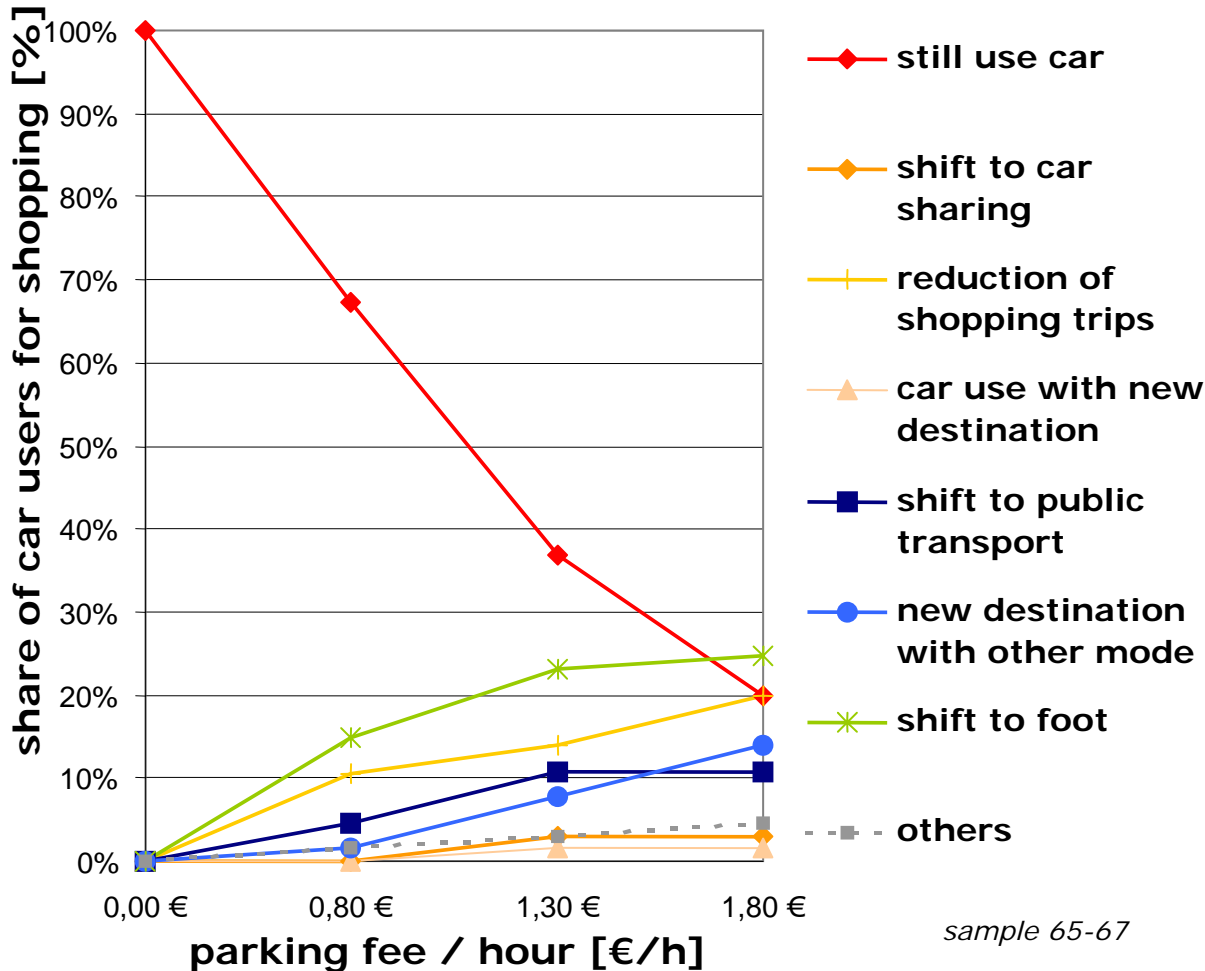
parking management for
private car parks

Options of parking management measures for private car parks

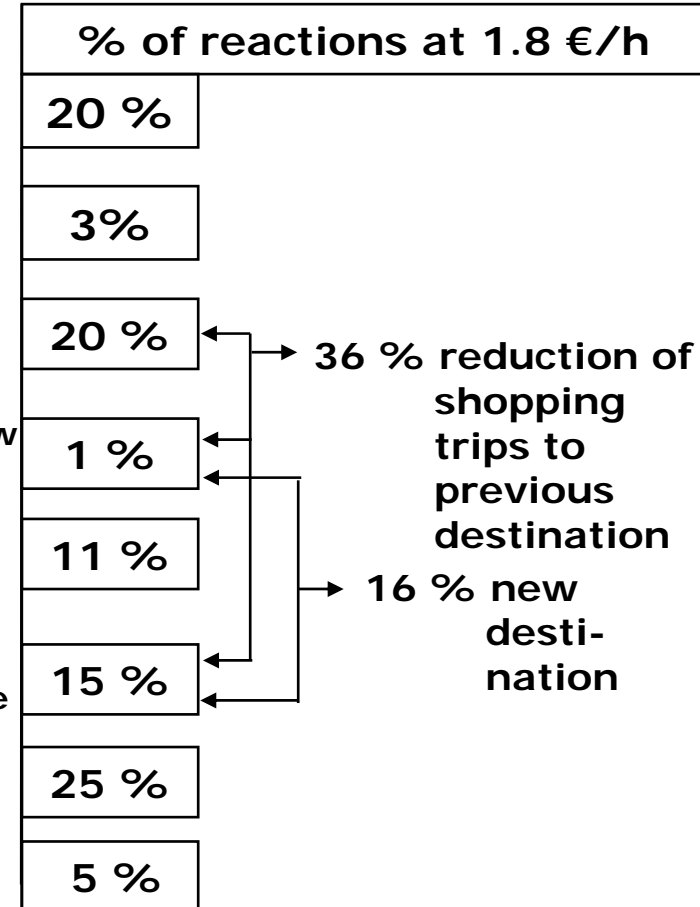
1	Obligatory limitation of the maximum number of private parking slots for customers and commuters
2	Parking space levy for operators of large private car parks 20 to 60 €/month, parking slot
3	Obligatory parking fees for customers (0,80 to 1,80 €/h) and commuters (20 to 60 €/month, parking slot)
4	Maximum trip quotas in combination with mobility management for customers 20 to 200 car trips/day, 1000 m ² gross floor area, penalty

Behavioural Reaction of Users of Cars for Shopping purposes

obligatory pay parking schemes for shopping centres in Vienna

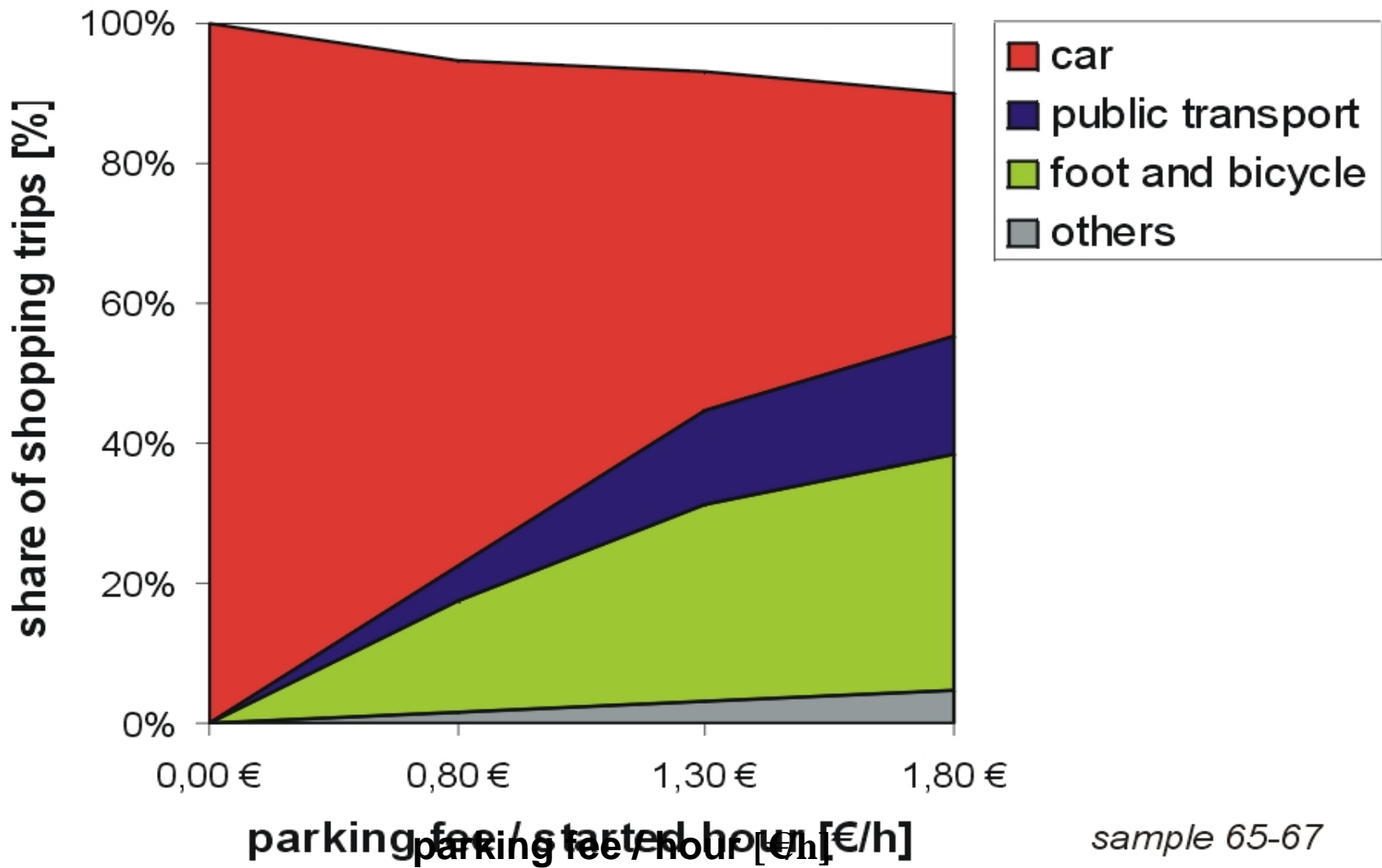


sample 65-67



Change of Modal Split for Shopping Purpose

obligatory pay parking schemes for shopping centres in Vienna



sample 65-67

Opinion of Operators and Developers

obligatory pay parking scheme (OPPS) for shopping centres

50 %	loss of image difficult argumentation to customers
100 %	refund of parking fee → loss of control effect for traffic demand → combination of OPPS with parking space levy
90 %	influence on decisions of location → problem at boundary of zones with different fee level → equal treatment of all locations is important

Opinion of Operators and Developers parking space levy for shopping centres

73 %	influence on the decision of location → problem at boundary of zones with different tax level → equal treatment of all location is important
100 %	passing the cost to customers
27 %	jeopardizing of existing location of shopping centres
64 %	reductions of number of parking slots

Recommendation

- Strong demand effects, mitigation of congestion
- Recommendation for combined measures
OPPS + parking space levy
- Recommendation for application
 - in low density areas outside cities
 - increased graduation of levy dependent on increasing car-orientation
- Limitation of car trips for shopping centres
 - possible application in air quality redevelopment areas
 - further research needed

Attention of Not Negligible Side Effects

- Short term effects for shopping trips
 - Omitted trips (deduced traffic) up to one quarter
 - consumer loss
 - Change of destination for shopping trips up to one quarter
 - weakening of shopping locations
 - appropriate zones for shopping centres with obligatory parking management measures?
 - problem of fair competition for obligatory zones with differentiated level of quota
- Long term effects
 - Strong effect on location choice for shopping centres
 - appropriate locations for obligatory OPPS
 - boundary problem?
- Further research recommended

Conclusion

- Traffic management very effective
- Attention to not negligible side effects
- Cost-effective contribution for sustainable transport policy

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