Congestion pricing and parking policy in the Netherlands

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Congestion pricing

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Brief history of congestion pricing in NL

Early 1980s	Principle of pricing introduced as policy option in national document
1990s	Plans to introduce tolling and ‘peak hour tags’
2004	“Different Payment for Mobility” principle
2005	Committee proposes fee by time of travel, place of travel, and environmental features of vehicle; step-wise reduction of fixed costs
2005	Parliament demands ‘cost neutrality’
2007	Decision to postpone full-scale introduction till 2012, but first ‘irreversible step’ by current government

Elements of proposed pricing scheme

- **Pay-as-you-drive:**
  - Payment by time, place and environmental features
  - Zero taxation on car ownership (no purchase tax, no road taxes)

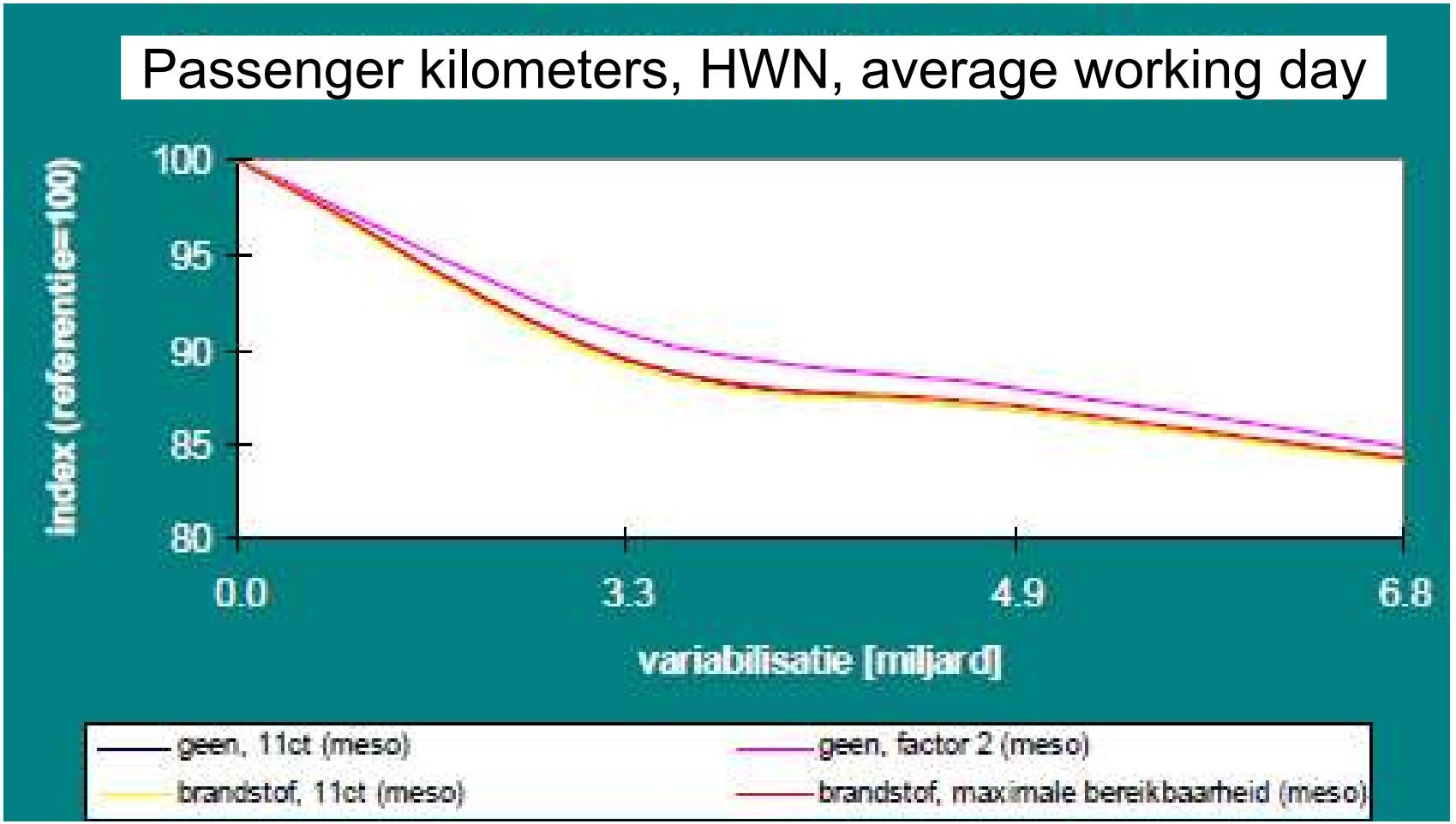
- **Additional 'speeding-up' price for road projects which:**
  - Have sufficient and earmarked budget
  - Solve notorious bottlenecks

- **Additional tolling for road projects which:**
  - Lack sufficient budget
  - Substantially improve traffic flow

Expected impacts by 2020

Topic	Indicator	Scenario		
		EC	SE min	SE max
Mobility	Car kms	- 9%	- 4%	- 16%
	Car kms HWN	--	- 4%	- 16%
	Lost hours	--	- 13%	- 63%
	Lost hours HWN	- 58%	- 14%	- 68%
Safety	No. deaths	- 9%	-4%	-13%
Environment	CO2	- 7%	- 10%	- 18%
	NO2	- 13%	- 8%	- 15%
	PM10	- 12%	- 11%	- 19%
Welfare / year		--	- €0.15 mrd	€0.55 mrd
Car ownership		--	+ 0.3%	+ 4.1%

Impact depending on rate fixed/variable costs



Impacts on mode choice (passenger kilometers)

	Fixed price	Variable price by time/place	Variable price by t/p and fuel type Zero car taxes
Car driver	-8.9%	-10.2%	-19.0%
Car passenger	-5.0%	-4.8%	-7.6%
Train	2.4%	2.6%	6.1%
Bus/Tram/Metro	2.4%	2.7%	6.1%
Slow modes	3.8%	4.0%	8.7%
Total	**-5.0%**	**-5.6%**	**-9.9%**

Elements of proposed first step

- Base charge
  - Passenger cars: 1.4 Eurocent per km on HWN, depending on environmental features of vehicle
  - Trucks: 1.7 Eurocent per km on HWN, depending on environmental features of vehicle
- Congestion charge
  - All vehicles: 11 Eurocent per km on heavily congested parts of HWN (V/C > 0.8)
- Additional truck charge
  - Heavy vehicles: 13.5 Eurocents per km
  - Light vehicles: 6 Eurocents per km

Source: Geurs 2007 – Analyse onzekerheden, p. 5

‘Second phase’ congestion pricing

- Dynamic congestion charge
  - Tariff varying from 5.5 Eurocent to 22 Eurocent depending on actual congestion level
  - Tariff increases in steps of 5.5 Eurocents

- Zero taxes related to car ownership

- Maximum price will not eliminate congestion

Congestion pricing and parking policy?

Parking policy

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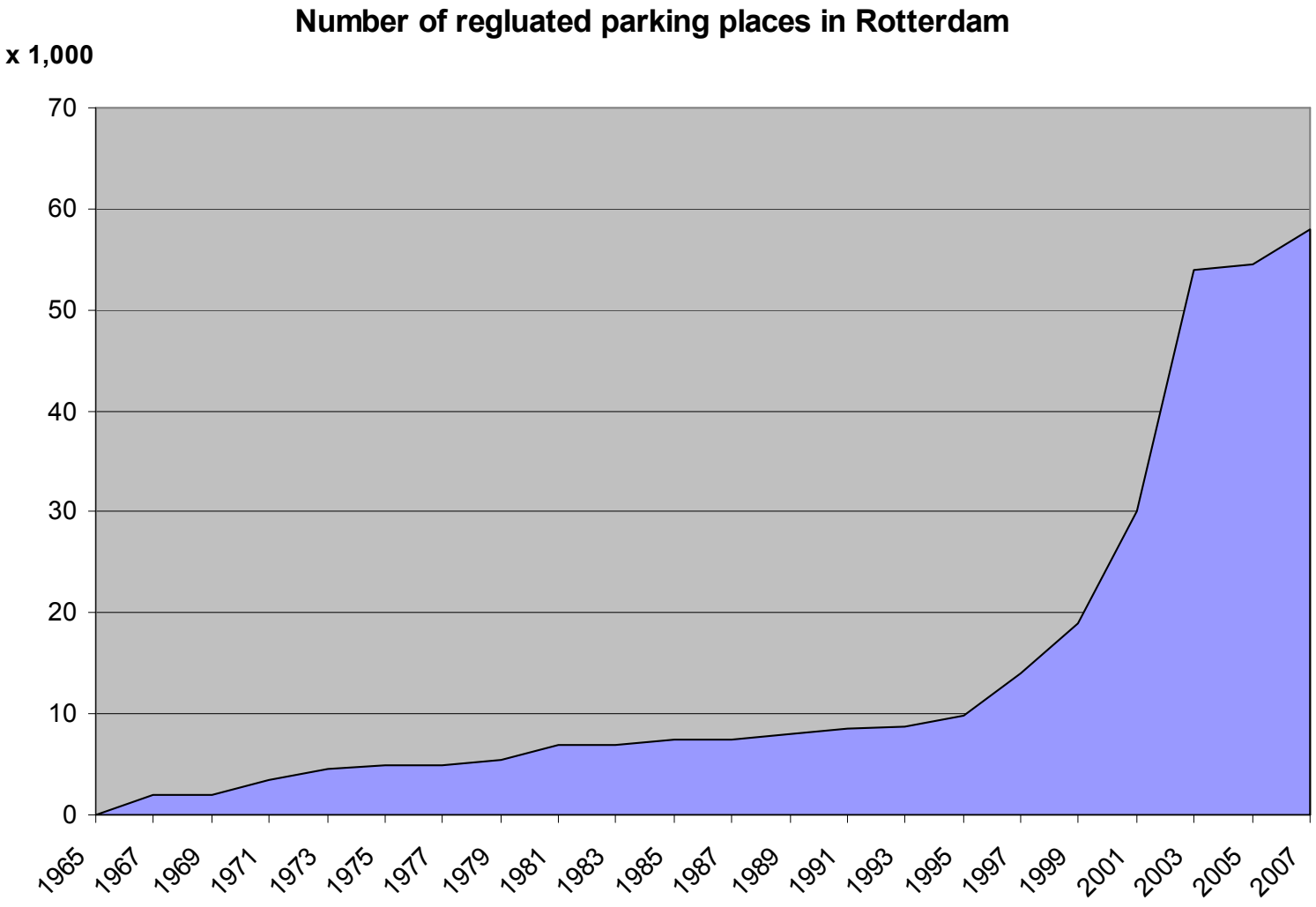
History of parking policy

- **1960s**: Introduction of minimum parking norms for employment and residential areas
- **Late 1970s**: First steps away from demand-driven parking policy, primarily for city centers
- **Late 1980s**: Vinex report
  - Parking norms on A and B locations
  - Parking norms for new Vinex neighborhoods
- **1990s**: On-street parking pricing defined as local tax
- **2000s**: Trend towards decentralization, parking regulation as local and regional responsibility

Parking norms for employment areas

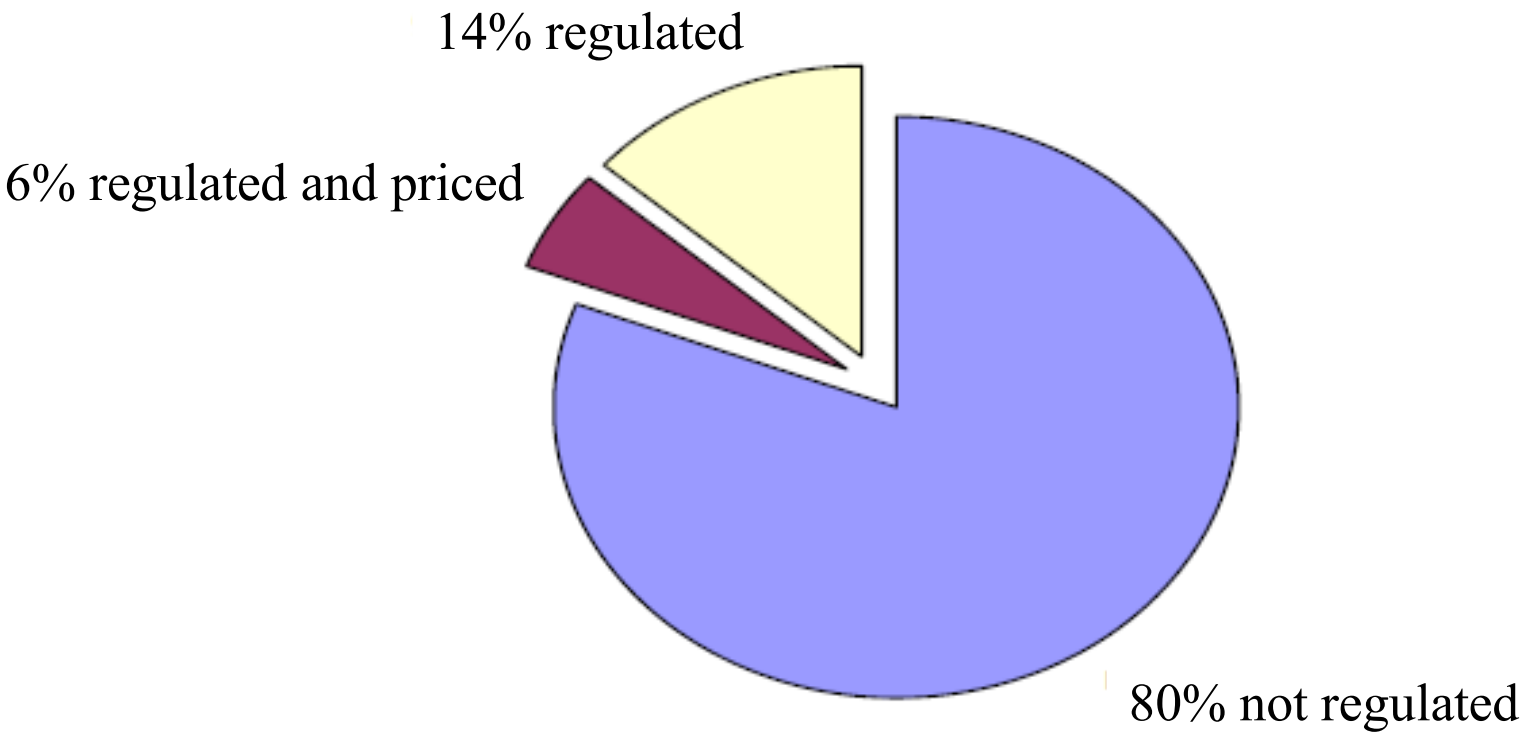
Location	Number of places per 100 employees	One parking place per m2 floor area
A-locations in Randstad and urban regions	10	250
A-locations in other cities	20	125
B-locations in Randstad and urban regions	20	125
B-locations in other cities	40	65

Increase in pricing of on-street parking



van de Coevering, 2008 #1619{}

Regulation of public parking places



Source: {Van Dijken, 2005 #1650}

Parking regulations at the home-end

- Permit system for residential parking
  - Usually against a fee
  - Often maximum number of permits

- Combination of paid parking and permit system
  - Paid parking to avoid commuter parking and enable visitor parking
  - Flat fare for residents through permit system

- Maximum parking norms for ‘Vinex’ neighborhoods
  - 1.2-1.5 parking places per housing unit

Future: increase in car ownership by 2020

Level of urbanization	Cars per household	Total no of cars
5 Highest	5-11%	5-30%
4	5-9%	10-31%
3	5-9%	11-35%
2	4-9%	8-32%
1 Lowest	4-9%	7-26%
Total	**5-10%**	**9-32%**

Possible future developments (VROM-Raad)

- Parking policies should reflect ‘responsible use’ of public space and tax payers money
- Integration of societal costs of parking (space use, negative effects on quality of public space) in parking prices
- User of parking facilities, rather than tax payer, should cover the expenses of parking, also in suburban areas
- Increase in parking fees to enable development of additional parking capacity in built structures
- Free on-street parking in urban centers will disappear

Congestion pricing versus home-end parking policy

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Factors determining congestion

Congestion as cumulative results of travelers' decisions regarding:

- Car ownership
- Mode choice
- Destination choice
- Route choice
- Departure time

Congestion pricing: impact on travel decisions

	Congestion pricing flat fare	Congestion pricing by place/time
Car ownership	↑	↑↑
Mode choice	↓	↓↓
Destination choice	↓	↓↓
Route choice	×	↓
Departure time	×	↓

Impacts on emissions-related decisions

	Congestion pricing flat fare	Congestion pricing by emissions
Vehicle age choice	✗	↓
Vehicle fuel choice	✗	↓
Vehicle fuel efficiency choice	✗	↓
Vehicle speed	✗	✗
Number of car trips (cold starts)	✗	✗
Vehicle maintenance	✗	✗

To what extent can parking pricing influence these decisions of travelers ?

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Parking pricing system at activity-end

- Resource-cost: Flat fare for all parking places
- Mode choice: Higher prices for parking places located in (highly) congested areas
- Departure time: Higher prices for use of parking in case of arrival during hours of road congestion

Parking at activity-end

	Flat fare pricing	Pricing by location	Pricing by location and time
Car ownership	?	?	?
Mode choice	↓	↓	↓
Destination choice	×	(↓)	(↓)
Route choice	×	×	×
Departure time	×	×	↓

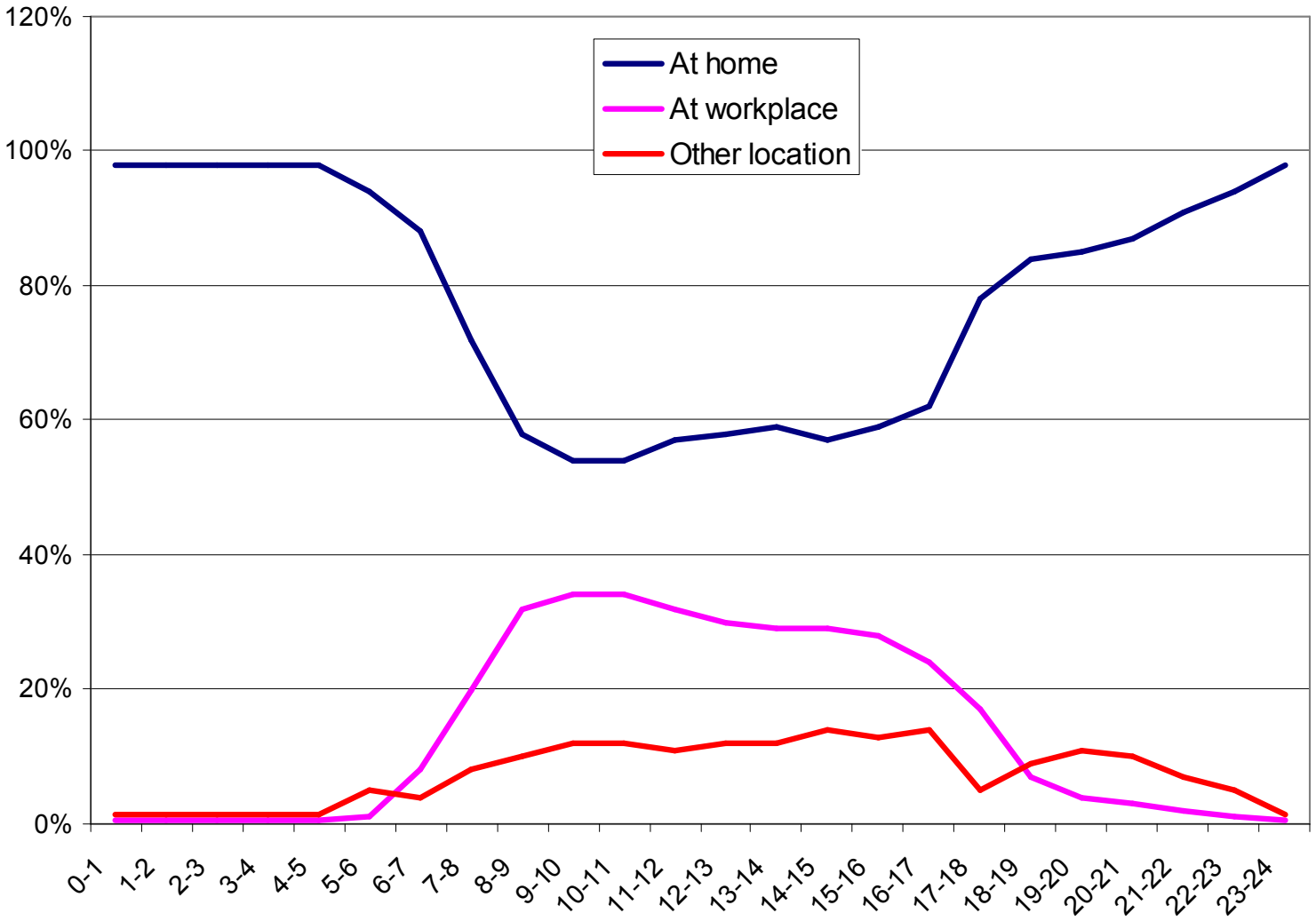
Parking pricing system at home-end

- Resource-cost pricing: Flat fare for all on-street parking places
- Mode choice: Higher prices for parking places located in (highly) congested areas
- Mode choice: Flat fare for leaving the parking place
- Departure time: Higher prices for egress of parking place in case of departure directly before or during hours of road congestion

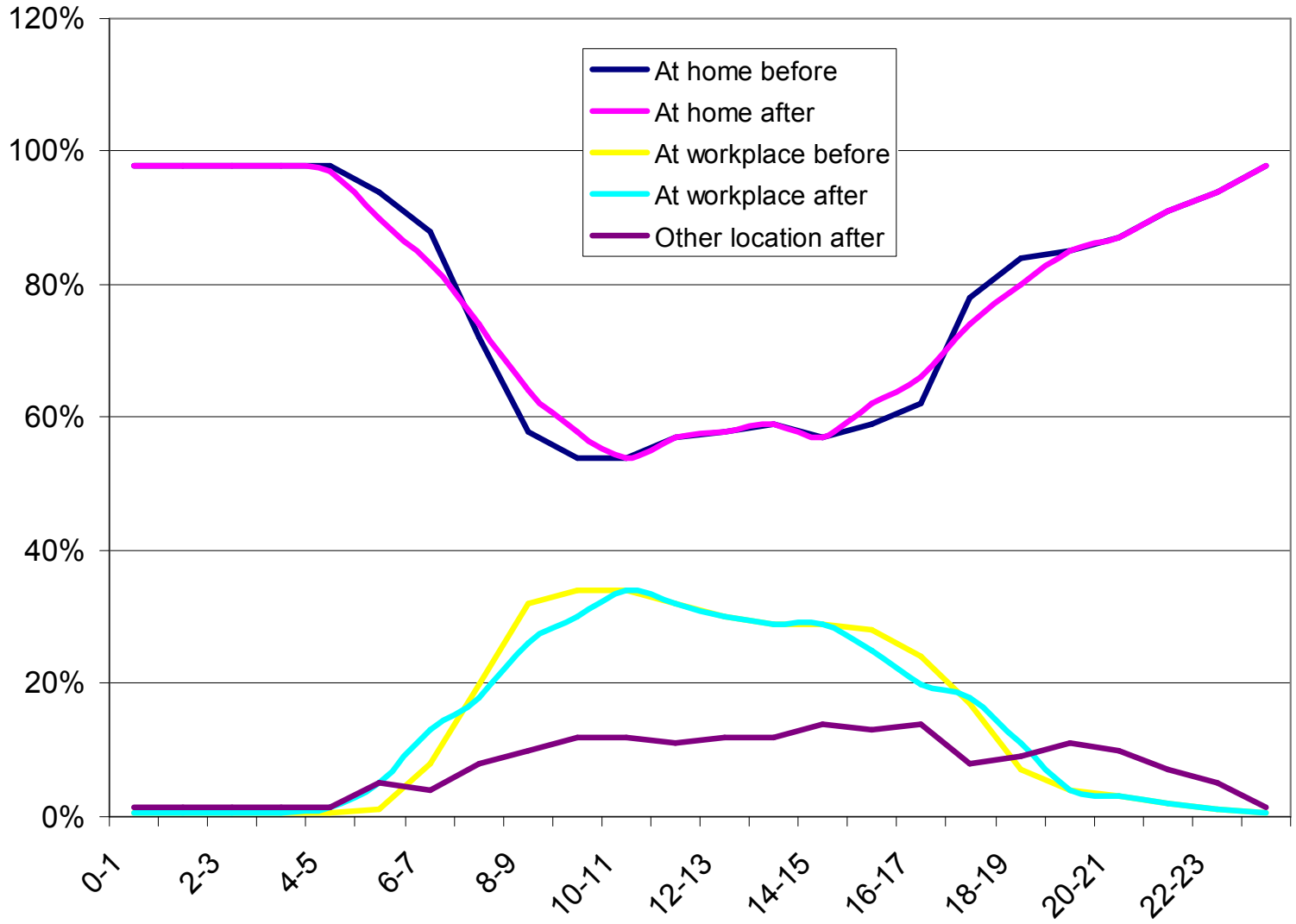
Parking at home-end

	Flat fare pricing	Pricing by location	Pricing by location and time
Car ownership	↓	↓	↓
Mode choice	×	↓	↓
Destination choice	×	×	×
Route choice	×	×	×
Departure time	×	×	↓

Distribution of parking demand over the day, by travel purpose



Distribution of parking demand, after introduction of home-end parking pricing



Home-end parking prices: Impacts on emission related decisions

	Flat fare pricing	Pricing by time and place
Vehicle age choice	×	×
Vehicle fuel choice	×	×
Vehicle fuel efficiency choice	×	×
Vehicle speed	×	×
Number of car trips (cold starts)	×	↓
Vehicle maintenance	×	×

Congestion versus home-end parking pricing

	Congestion pricing by place/time	Home-end pricing by place/time
Car ownership	↑	↓
Mode choice	↓	↓
Destination choice	↓	×
Route choice	↓	×
Departure time	↓	↓

Implementation of home-end parking pricing?

- Local implementation ?
- Technology ?
- Enforcement ?
- Parking dynamics
- Social acceptance

Conclusions

- Strong tendency to integrate external effects and/or resource-costs into pricing of road use and parking
- Parking pricing not explored as alternative to highly ambitious and complex congestion pricing scheme
- Increase in car ownership highly problematic
- Hence: congestion pricing cannot replace parking policy