



International Transport Forum

BTRE GUEST SEMINAR
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« *Recent Road Pricing Experience* »

Jack Short
Secretary General
International Transport Forum

www.internationaltransportforum.org

www.cemt.org

Road Pricing

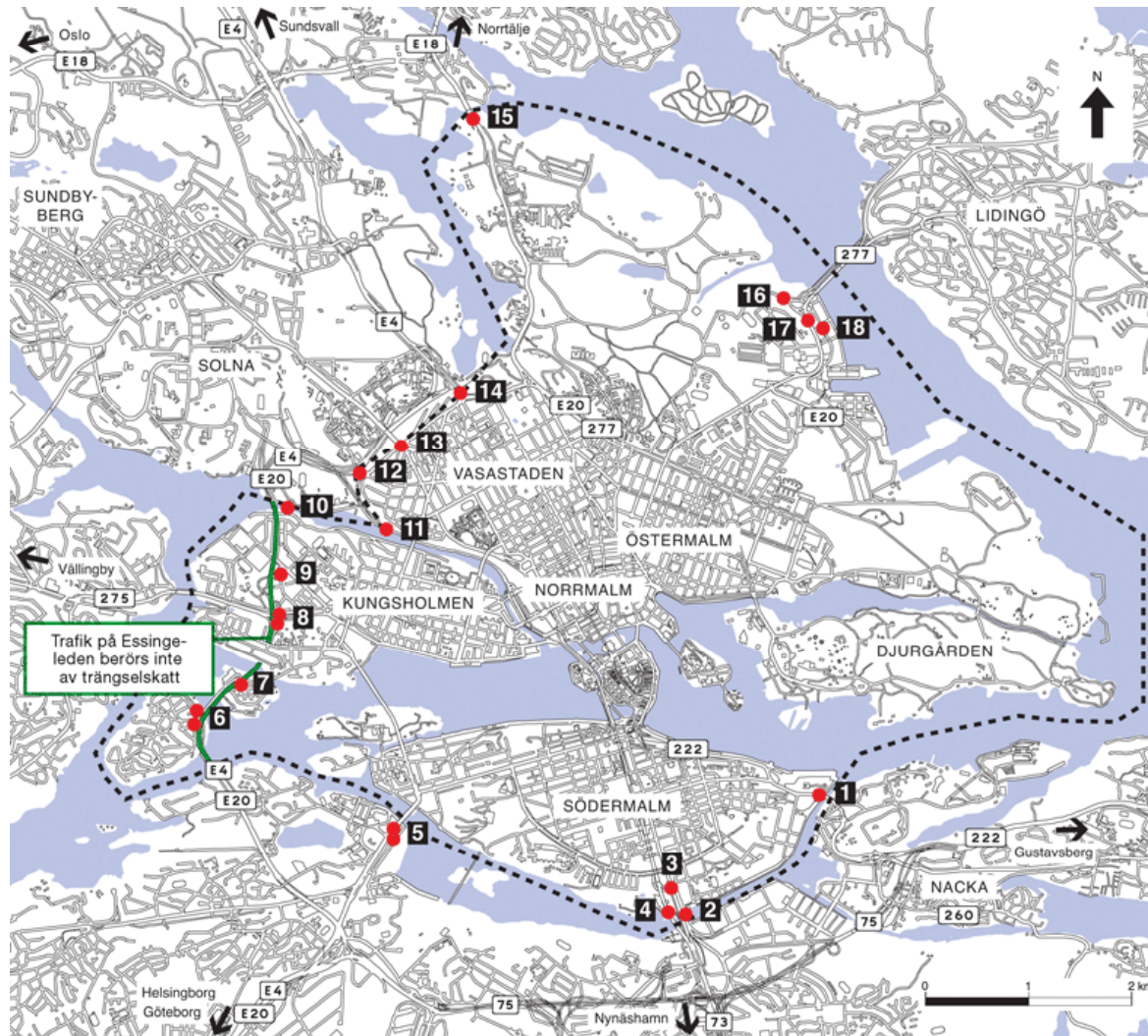
- Long academic pedigree
Dupuit (Fr, 1849), Pigou (UK, 1920), Knight (US, 1924) Walters (UK, 1961), Smeed REport (UK, 1964), Vickery (USA, 1963)
- Double consensus
 - Analysts and academics all for
 - Politicians against



New Developments

- Concrete trials and applications
- Schemes different in many ways
 - Applications
 - Policy objectives
 - Economic arguments
 - Technology used

Stockholm Charging Cordon

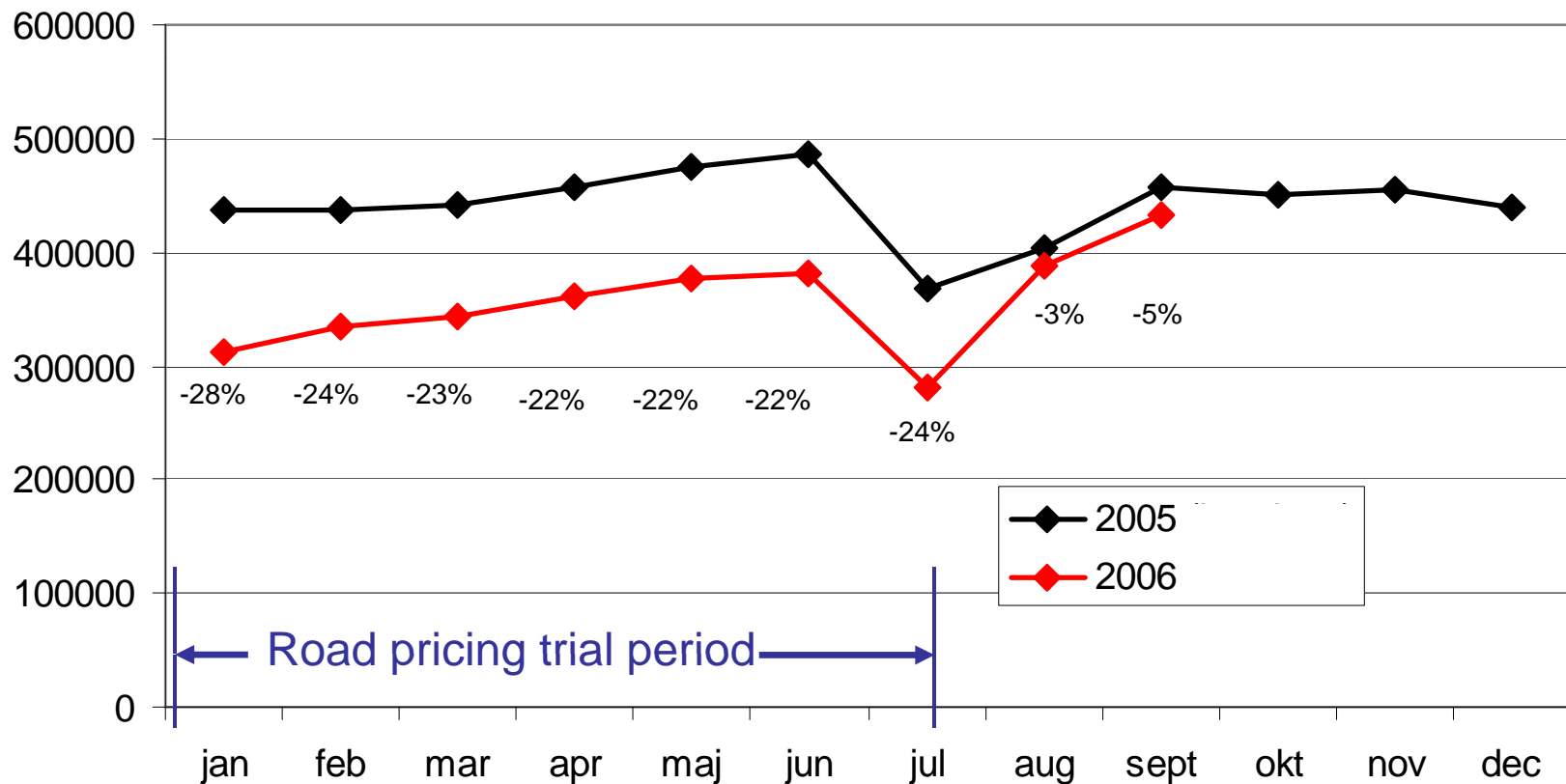


Stockholm Cordon Charges

- 1 to 2 Euros per crossing depending on time of day
- Cap on payments per vehicle of 6 Euros per day

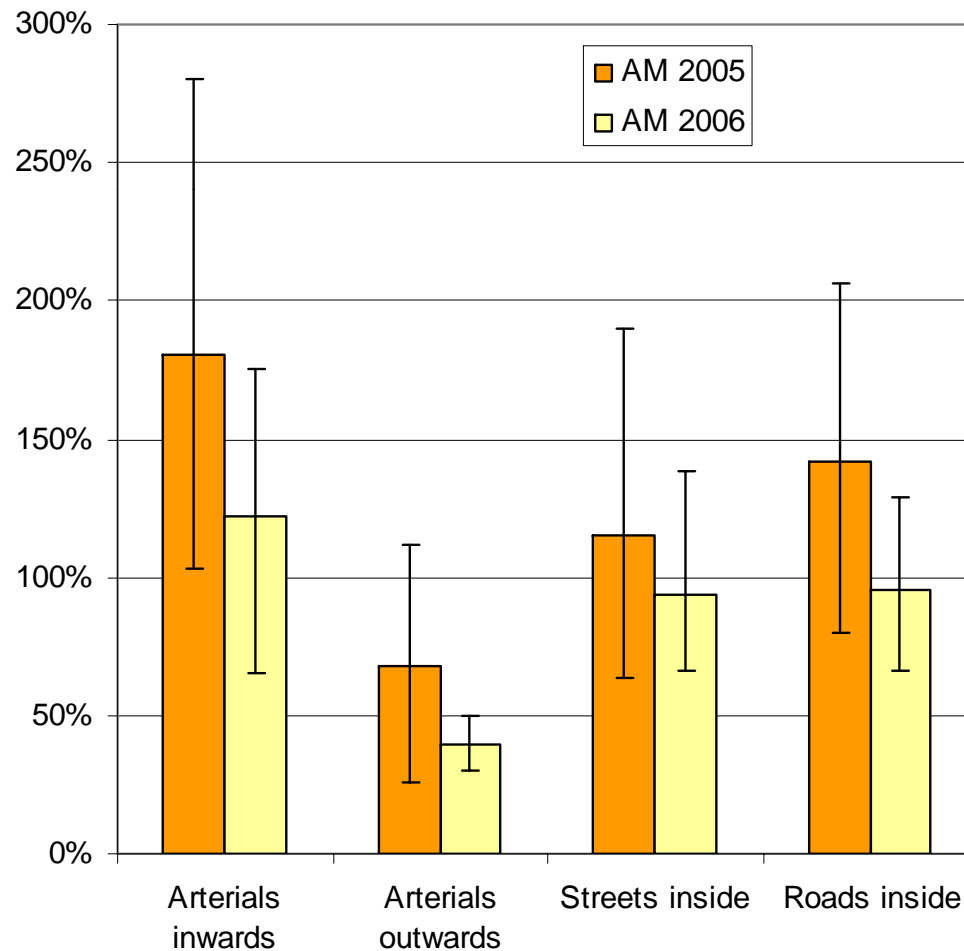
Did the Stockholm Charge Work?

Vehicles crossing cordon on weekdays: **22% drop in traffic**



Delays Reduced, Reliability Improved

Average
trip times
compared
to free flow
&
10% best
and worst
trip times





Where did cars go?

- Half of “evicted” trips for work or school
 - Half of these moved to public transport
- Half discretionary
 - No switch to public transport, trips were cancelled or combined with other trips



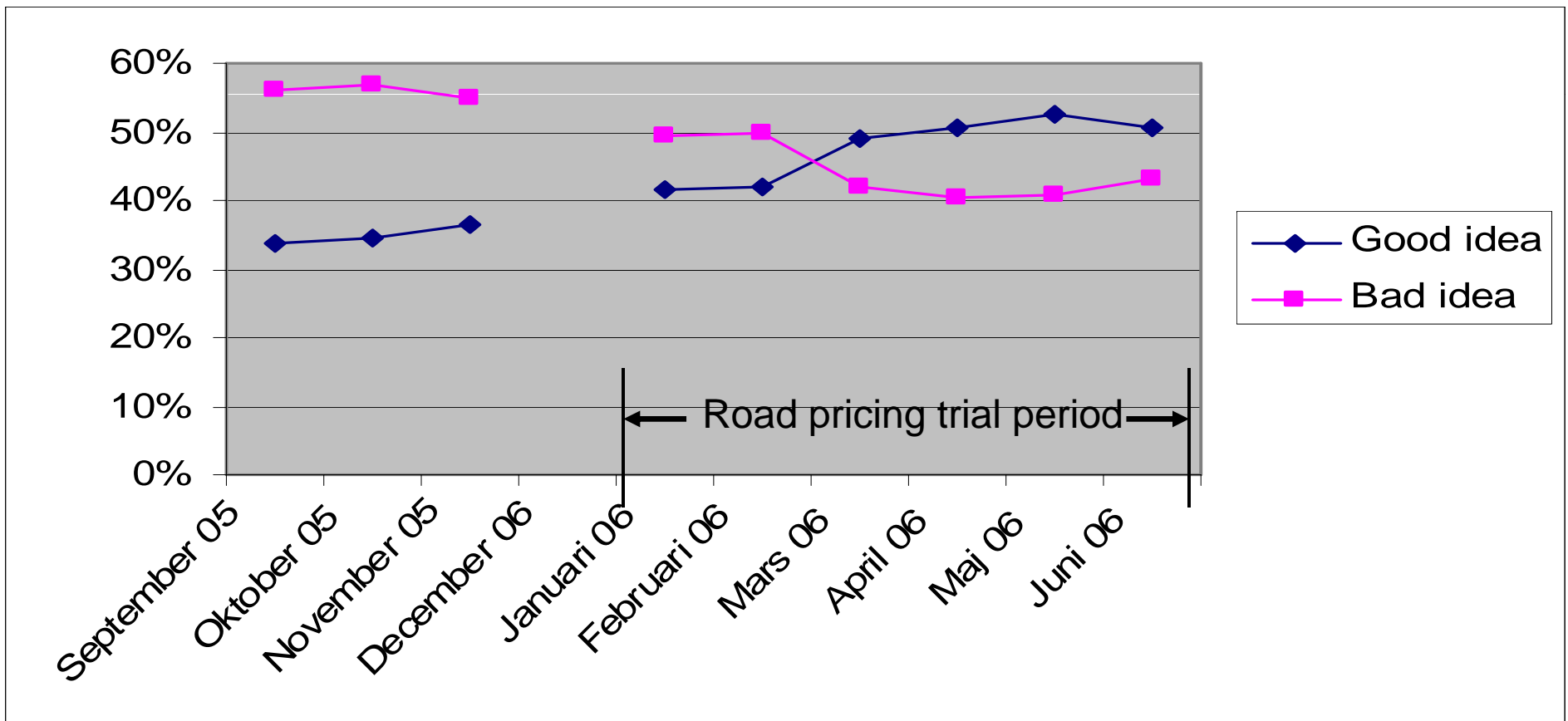
Economic Assessment

- Positive
- Assuming emissions reductions are added to congestion relief
- Assuming bus capacity expansion is not an integral part of scheme, as there was spare capacity
- Result is very sensitive to differentiation of values of time assigned to users
- Note, technology performed better than expected and 2008 version will reduce costs by eliminating redundancies



Acceptance: Seeing is believing

Public opinion in Stockholm



Outcome of Referendum on Trial

- Charging will begin long term in Jan 2008
- Stockholm city residents for, region against
- Ruling party campaigned against charge but forced to introduce by coalition partners
- Stockholm region compensated by revenues earmarked for regional roads

London

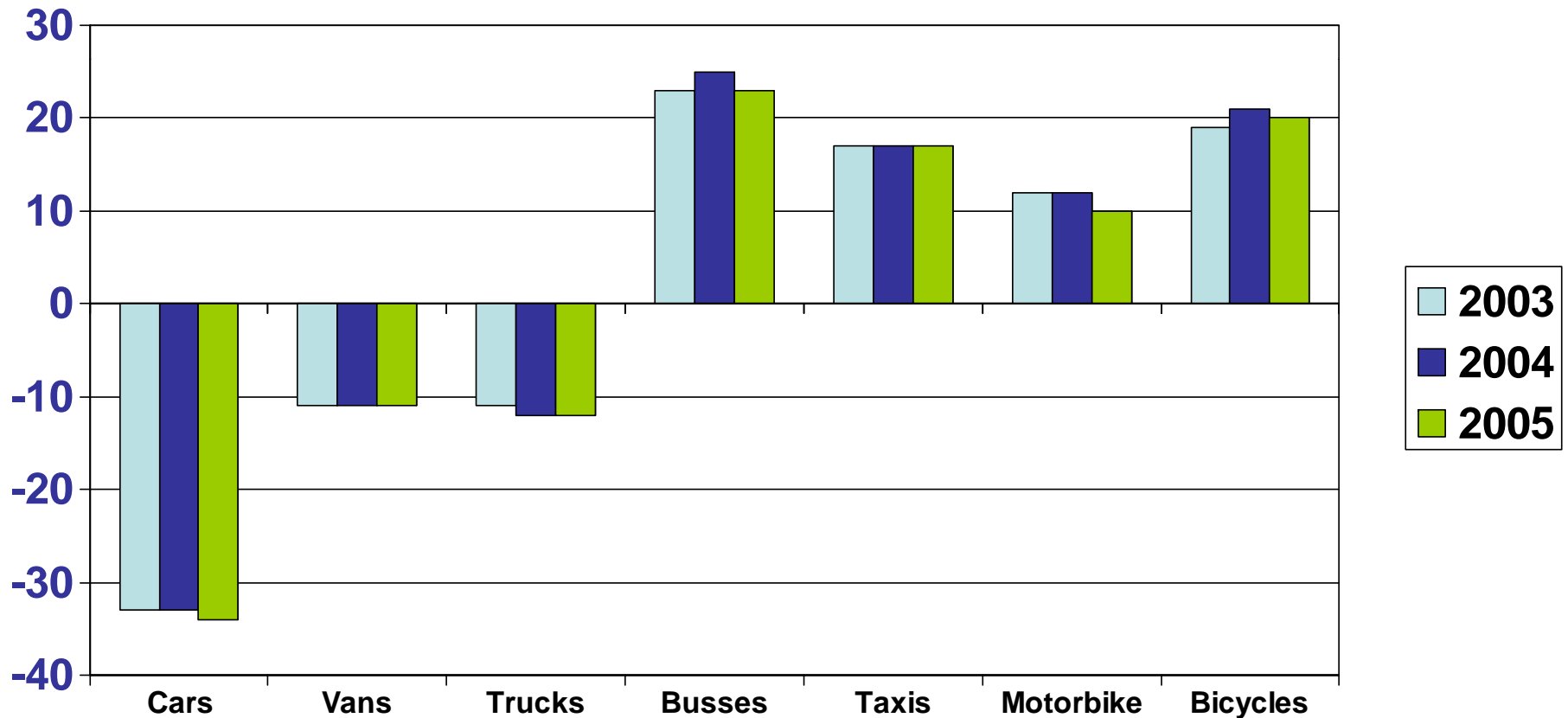
- Four year study in late 1990's
- Ken Livingston introduced as election pledge in 2003

London Charges Now

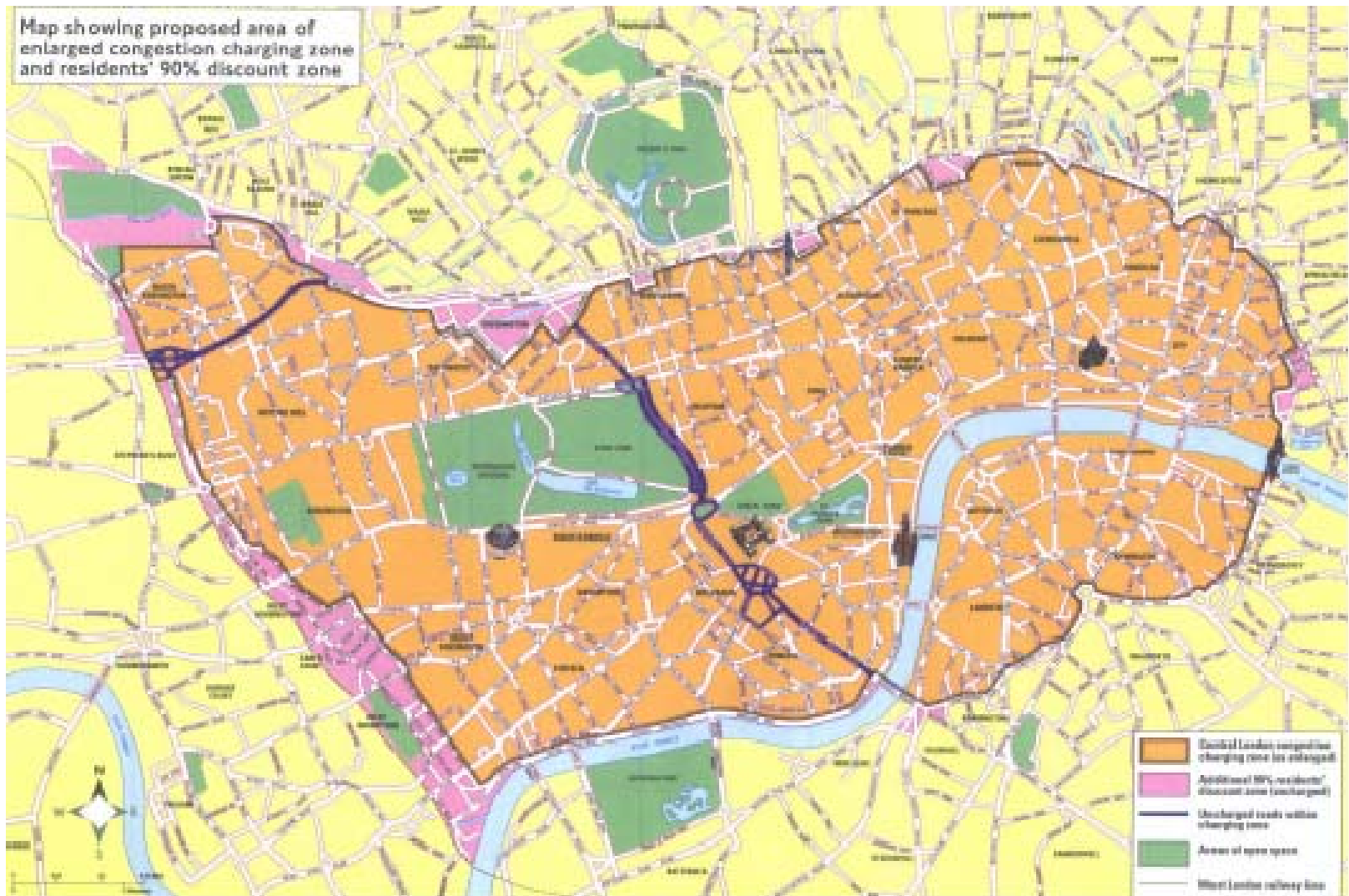
- 8 pounds a day
- 7 pounds for registered fleet vehicles
- 90% discount for residents
- Exemptions: taxis, buses, two wheelers, alternative fueled vehicles.

Impact on traffic in City zone: delays down 30%

Vehicles entering the zone - % change over 2002



London CC Extended





Charge relative to cost of congestion

- Oxford University Transport Studies Unit, G. Santos, supports TfL modelling that charge about right but:
- Cars over-charged
- Trucks under-charged
- Vans about right at 8 pounds – undercharged at previous 5 pounds level
- Residents “priced *on to roads*”.

The Economic Costs and Benefits of the London Congestion Charge (2003)

Annual Costs

TfL administrative and other costs	5
Scheme operation	90
Additional bus costs	20
Chargepayer compliance costs	15
Total	130

Annual Benefits

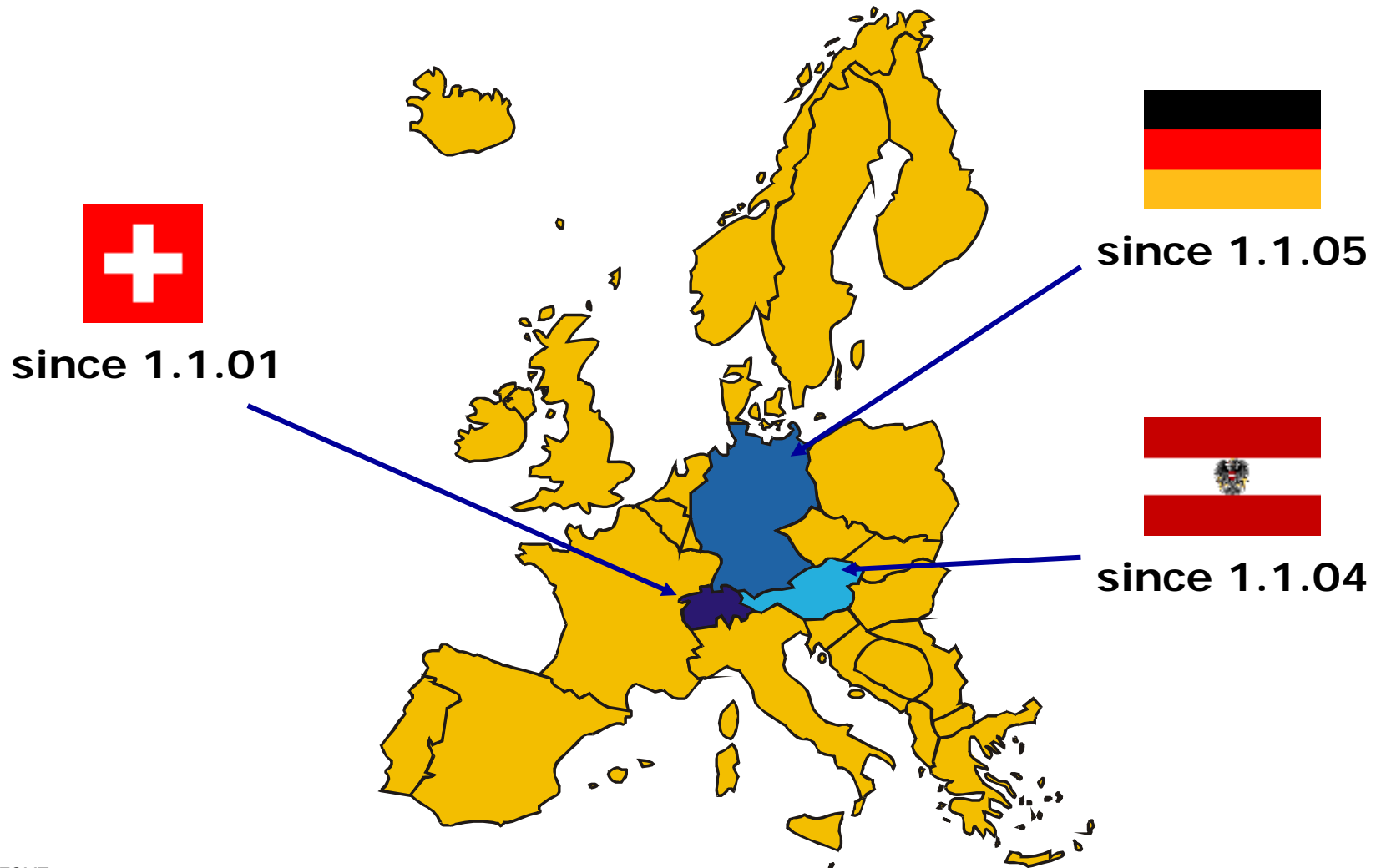
Time savings to car and taxi occupants, business use	75
Time savings to car and taxi occupants, private use	40
Time savings to commercial vehicle occupants	20
Time savings to bus passengers	20
Reliability benefits to car, taxi and commercial vehicle occupants	10
Reliability benefits to bus passengers	10
Vehicle fuel and operating savings	10
Accident savings	15
Disbenefit to car occupants transferring to public transport, etc.	-20
Total	180



Western Extension

- 10-14% veh-km decrease forecast by TfL
- 2/3 vehicles pay no additional charge:
 - Paid already for City zone
 - Residents
 - Buses, taxis etc.
- Congestion impact and cost effectiveness less than for City zone

First heavy vehicle km charges



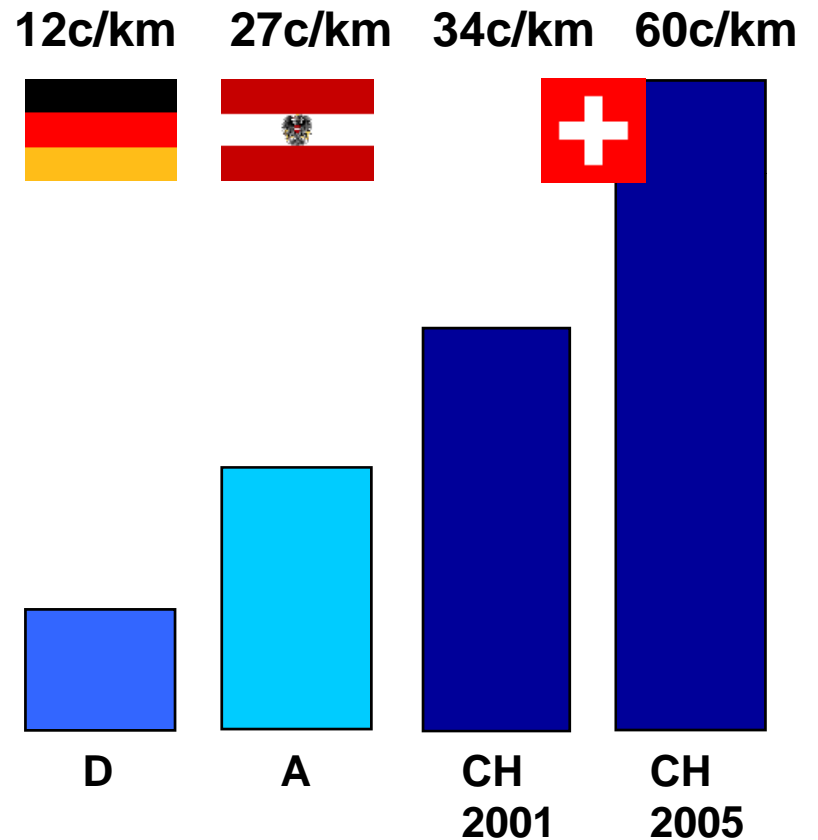


High tariffs make
for good cost
effectiveness

Operational costs
as % of revenue

Switzerland	6-8%
Austria	10-12%
Germany	20-22%

Charge for a 40t lorry





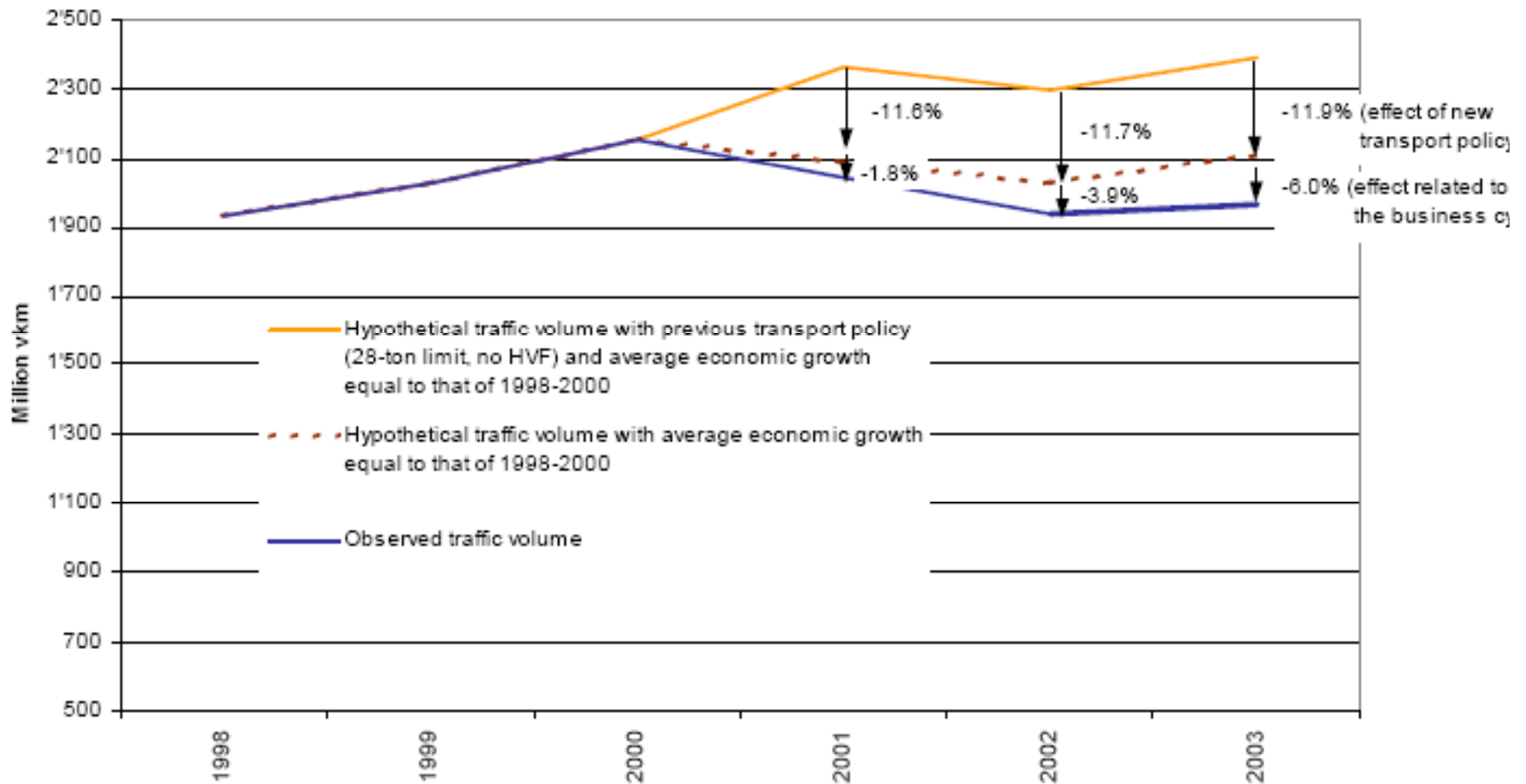
	Austria	Germany	Switzerland
Charged network	Motorways & some expressways	Motorways	all roads
Charged vehicles	HV >3.5 tons	HGV >12 tons	HGV >3.5 tons
Charge parameters	<ul style="list-style-type: none">• distance• axles	<ul style="list-style-type: none">• distance• axles• emission class	<ul style="list-style-type: none">• (all) distance• weight• emission class
Legal nature	Fee, subject to VAT	Tax, no VAT	Tax, no VAT
Charging technology	DSRC (mandatory OBU)	GPS/GSM or journey booking	Tacho/GPS/DSRC or manual recording

Technology

- Austria HVF – Transponders, ANPR enforcement, motorways only – few access points so low cost
- German Maut – Satellite and mobile phone technology, motorways only but designed to cope with all roads
- Swiss HVF – Transponders linked to tachograph for km reading, satellite back up to switch off transponder at border fails, charges on all roads, simple and cheaper than German system



Impact of the Swiss HVF





Impact of German Maut on Freight

- The number of loaded runs increased by 2% to a total of 82 %
- There was an approx. 15% reduction in the number of empty runs
- The number of containers carried by rail increased by about 7 %

Dutch Policy

- “Rekening rijden I”, km-charge, 1988-1990
- “Spitsvignet”, rush-hour charge, 1990-1993
- “Rekening rijden II”, tolling cordons around 4 major cities, 1994-2001
- “Kilometerheffing”, km-charge, 2001-2004
- “Better charging” national km-charge 2005→
- Now 2010 for national system

Developed through consensus but with tough conditions

- User “platform” recommended charges
- To replace fixed vehicle charges
- With “fairer” pay-as-you go charge
- “Fairness” means a national scheme, that is revenue neutral and identical for all users
- Costs must not exceed 5% of revenues



UK Policy

- Km charges inevitable - not if, but when and how?
 - To manage demand
 - To level charges paid by domestic and foreign trucks (high diesel tax)
 - To reduce excise tax burden in rural areas
- Electronic lorry charge
 - trialed around Leeds in 2004 for introduction in 2008
 - abandoned because expensive compared to paper system
- Goal – national electronic km charge for all vehicles
 - differentiated for congestion
 - to replace part of fuel excise

US: Value Pricing

- Two examples in Southern California:
I-15 (near San Diego),
SR-91 (connects Riverside and Orange Counties).
- Offers a choice: toll and fast travel, or no toll and slow travel (“**product differentiation**”).



- SR-91: tolls vary by time of day and day of week, but not with specific traffic volumes (“**static** pricing”);
- I-15: tolls depend on volumes, to keep traffic smooth (“**dynamic** pricing”).
- SR-91: new lanes, initially private, purchased by public authority to bypass “non-compete clause”;
- I-15: existing carpool lanes converted to carpool + toll lanes (“HOT lanes”).



- Value pricing is **facility pricing** (US way), different from cordon pricing (European way).
- Attractiveness of toll lanes relies on considerable congestion on free lanes.
- Assessments:
 - Value pricing is **better than no pricing**,
 - Gains in **reliability** as important as reduction of average travel time.