
The Stockholm congestion charging trial – what happened?

Expert group summary

Expert group

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The expert's challenge

- To give a summary of the complete picture
- Thoroughly scrutinize the results, methodologies and conclusions
- Concluding summary of results and observations from all rapports

- Taken into account surrounding world, methodology, samples etc etc
- All reports fairly consistent

Comprehensive and detailed evaluation

- **Travel survey Stockholm county** (*August*)
 - **Travel survey Mälardalen**
 - **Car traffic**
 - **Cordon passages**
 - **GPS – travel times**
 - **Queue lengths**
 - **Public transit** (*August*)
 - **Parking**
 - **Cycle and walk** (*cycle in August*)
 - **Traffic safety**

 - **Experienced environment**
 - **City life** (*August*)
 - **Air quality**
 - **Emissions**
 - **Noise**
- **Retail and visiting**
 - **Taxi/deliveries/mobility service**
 - **Workmen, driving schools**
 - **Deliveries, garbage collecting**
 - **Case study: Two workplaces**

 - **Childrens sports activities**

 - **Cost-benefit analysis** (*equity effects in August*)

 - **Regional economic analysis**

 - **Log of special events**

Today:

overview and samples!

- three seminars next week
- expert group and project managers at your disposal

Questions before the trial

- Adaptation to charges – but how?
- Short trial period – better not change?
- Effects noticeable at the mere sight?
- Will Essingeleden (the ring road) cope?
- Will the transit system cope?

Goals essentially reached

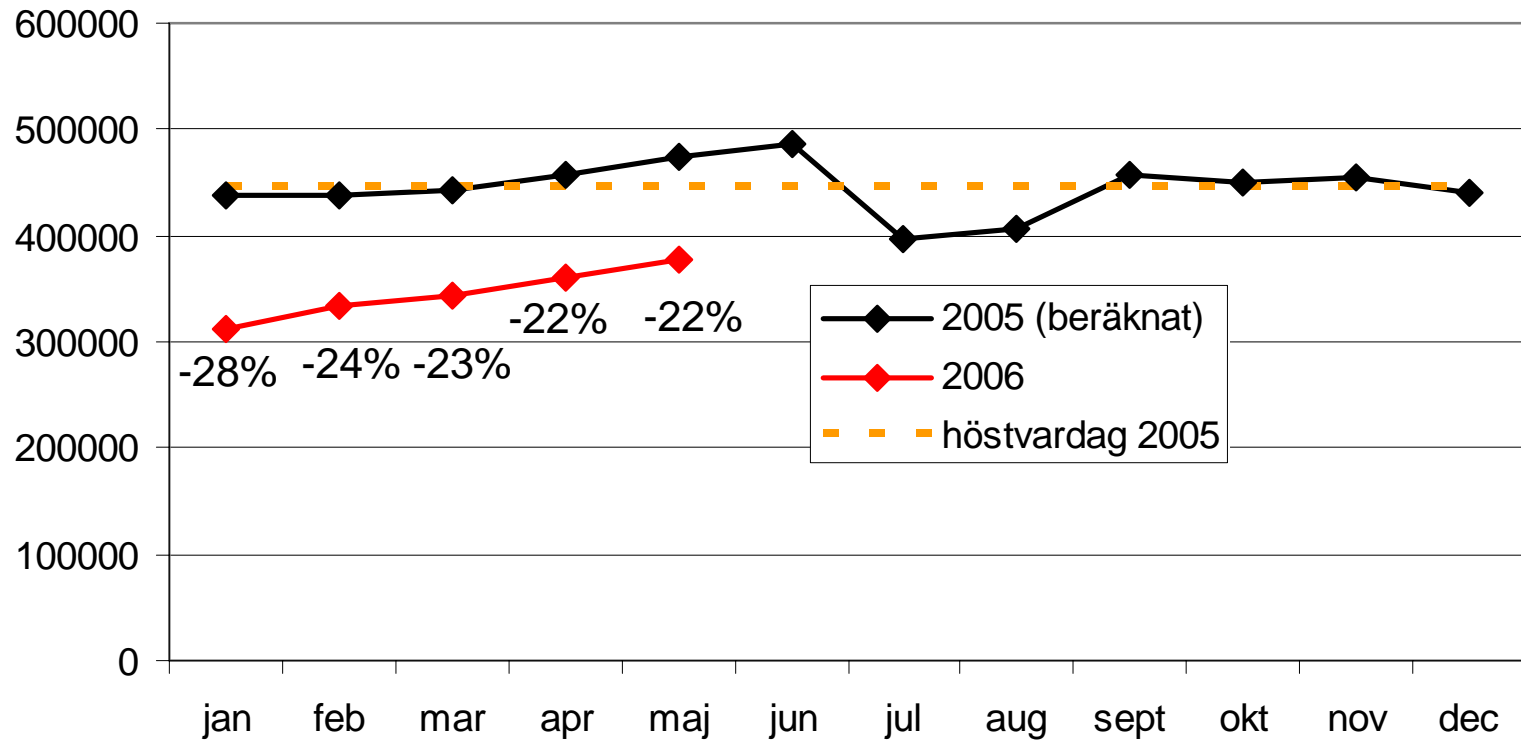
- 10 - 15 % less traffic to/from inner city
 - Was 20-25%
- Increased accessibility
 - Queue times down 30-50%, except Essingeleden
- Decreased emissions
 - 14% less in inner city; 2,5% in total county
- Inhabitants should perceive an improved urban environment
 - Unclear – difficult to define and measure



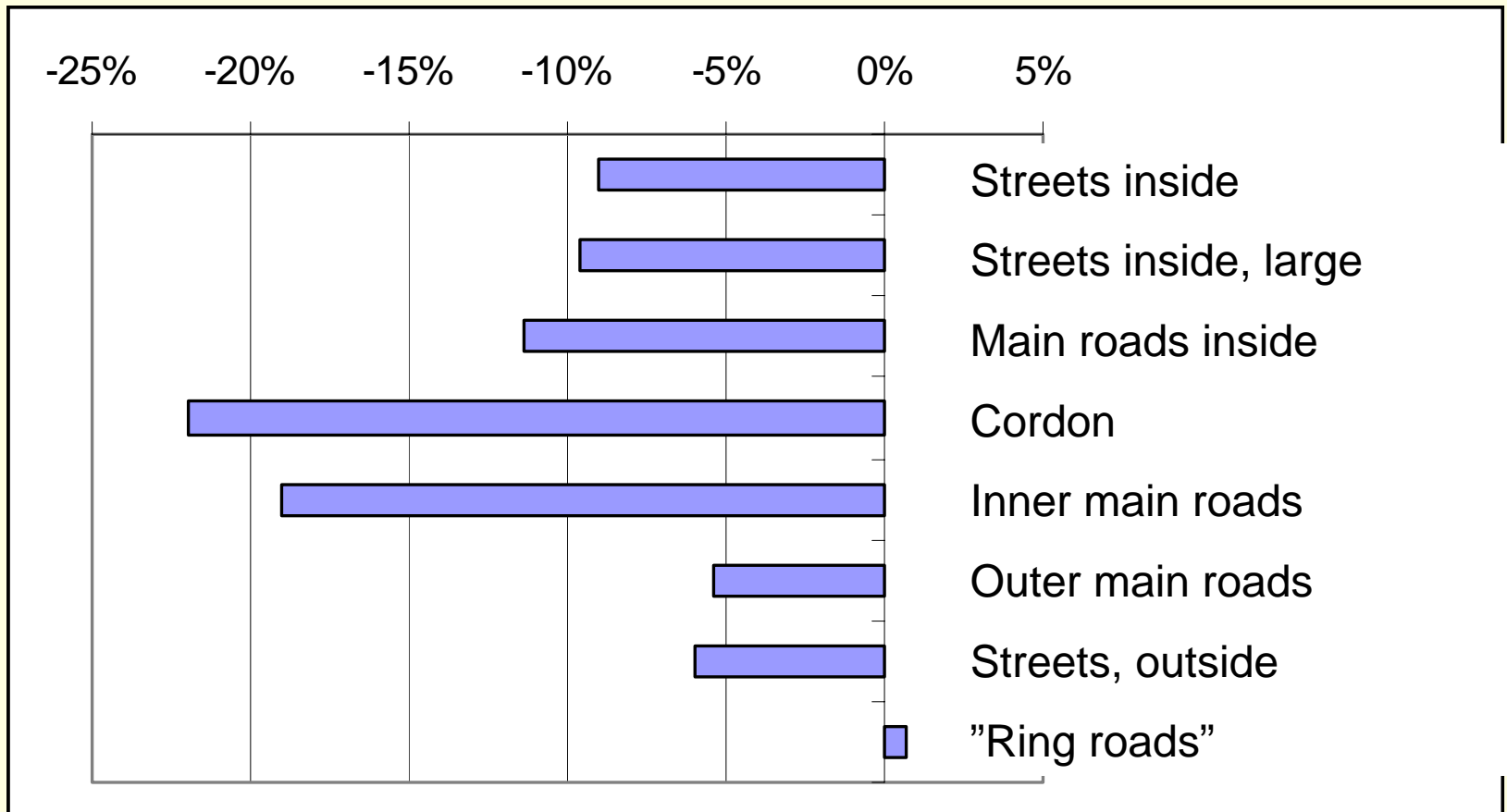
Effects on car traffic and congestion

Effects stabilised quickly

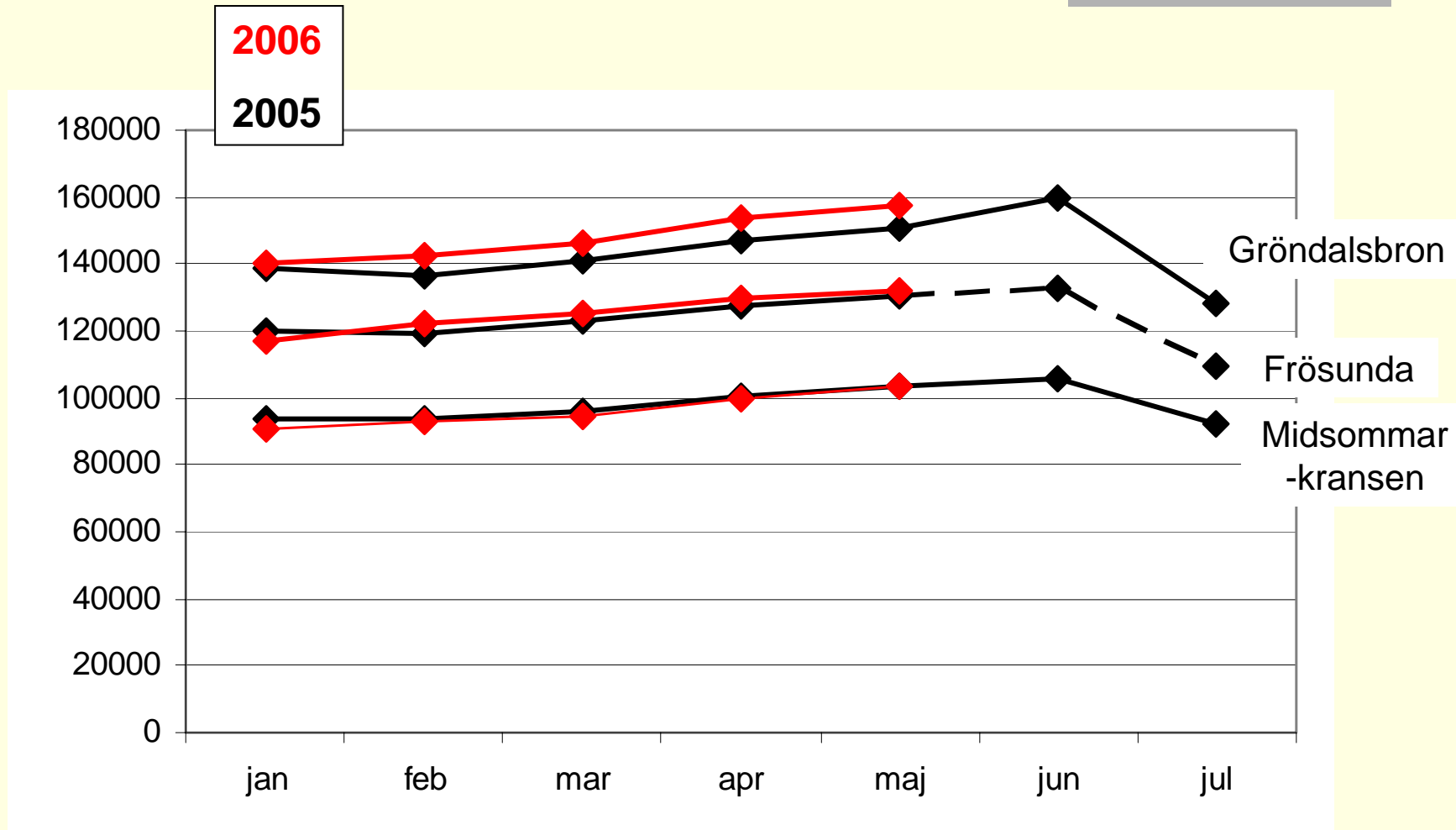
Passager över avgiftssnittet kl 6-19



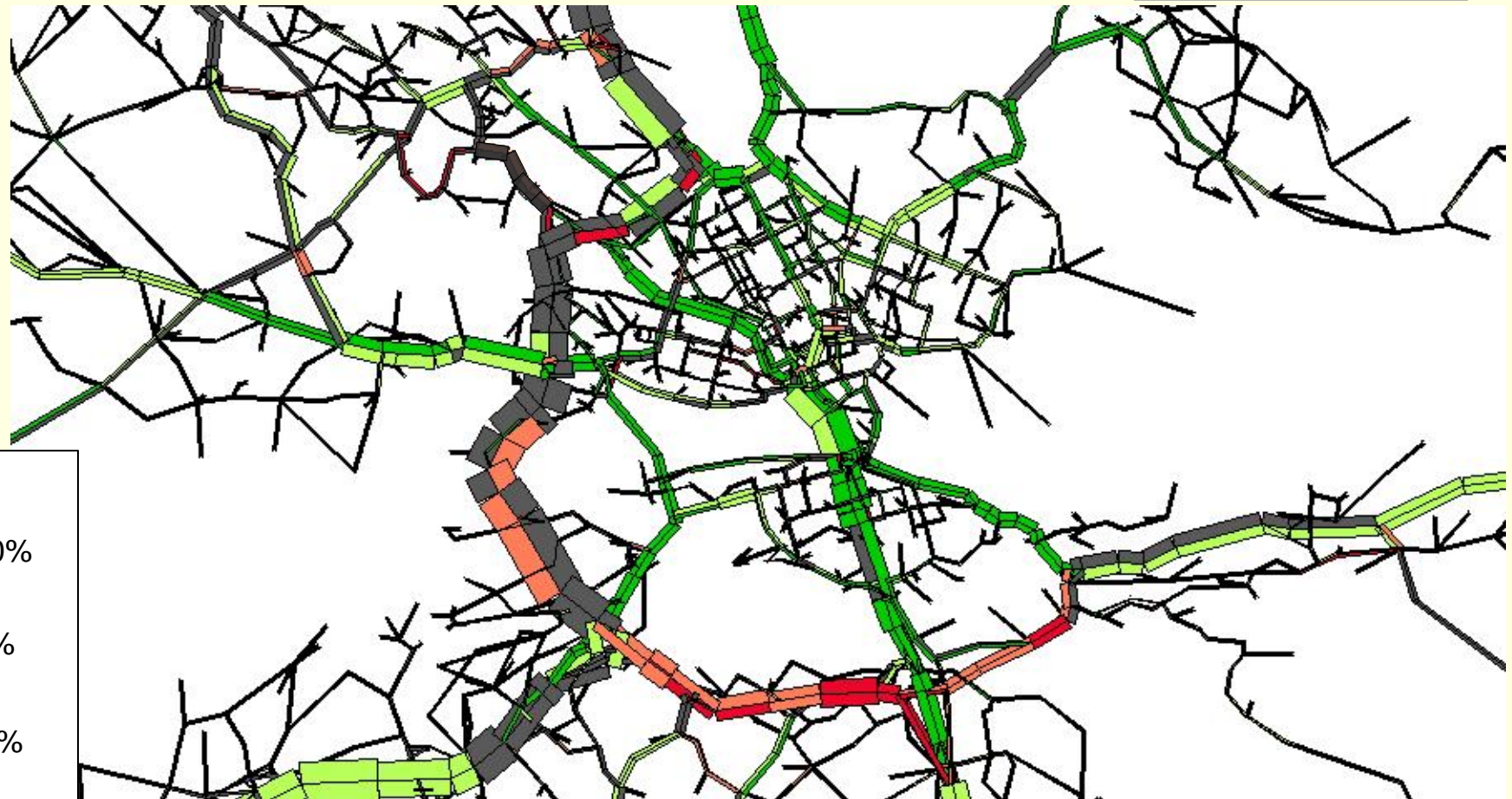
Less traffic also further out and inside the cordon



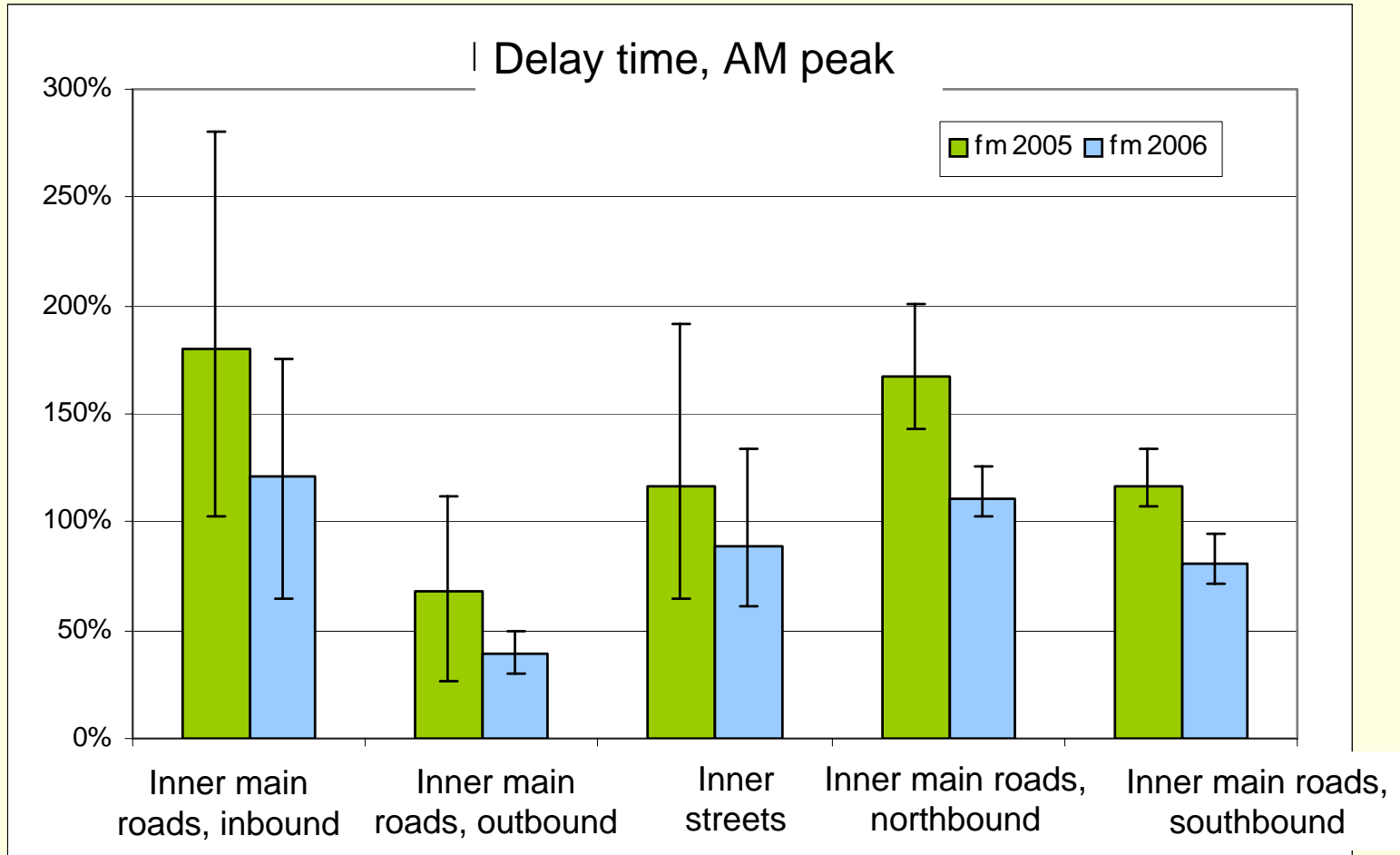
Unexpectedly small traffic increase on E4-Essingeleden



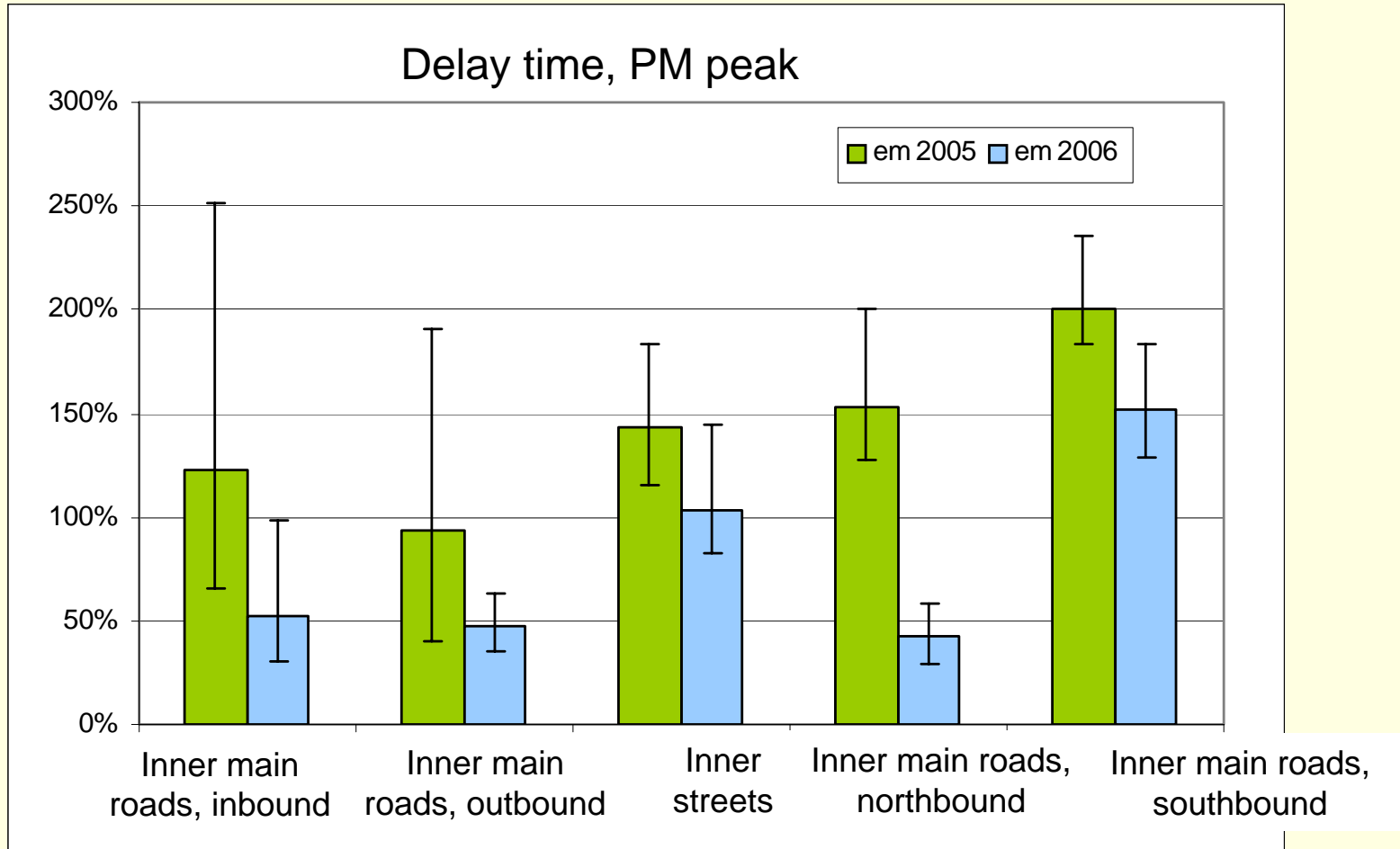
Effects on car traffic - prel. overview



30-50% less time in queues



Even larger effect on PM peak

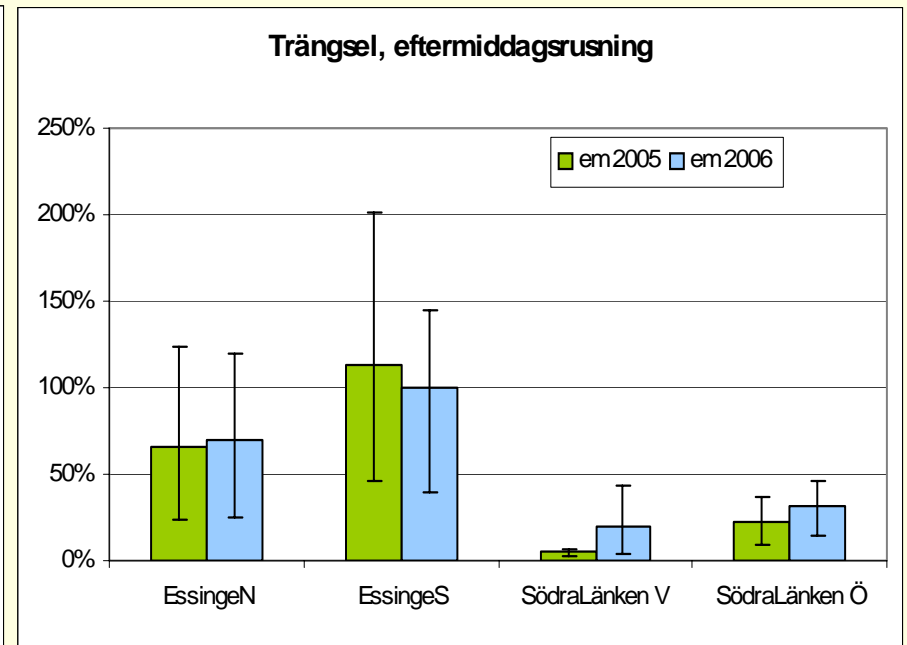
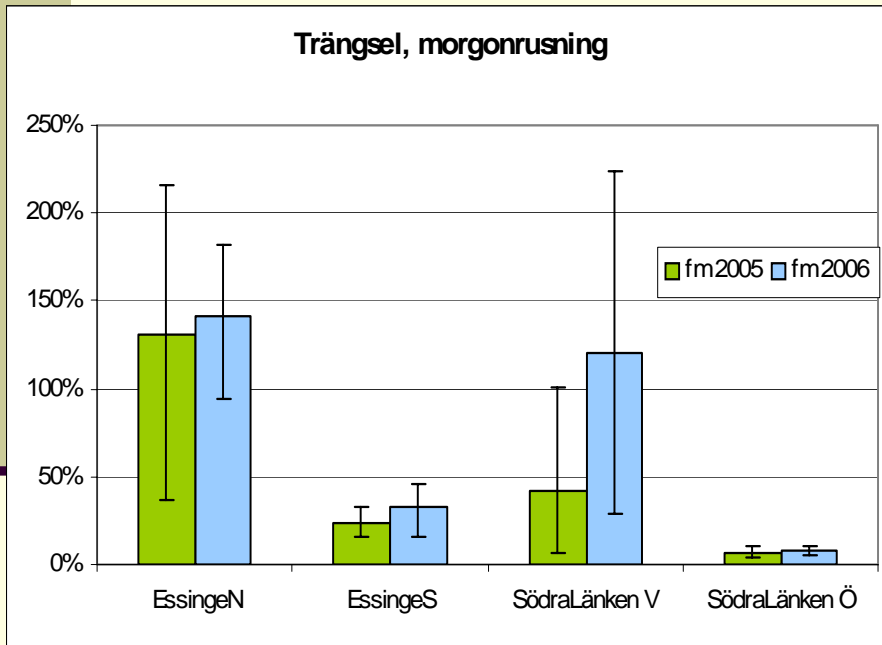


Noticeable decrease of congestion

- Several studies show that reductions of congestion and travel time have been noticeable "with a naked eye"
 - deliveries, taxi etc.
 - attitude polls, cycle etc.

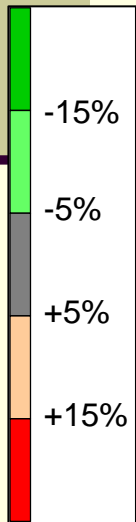
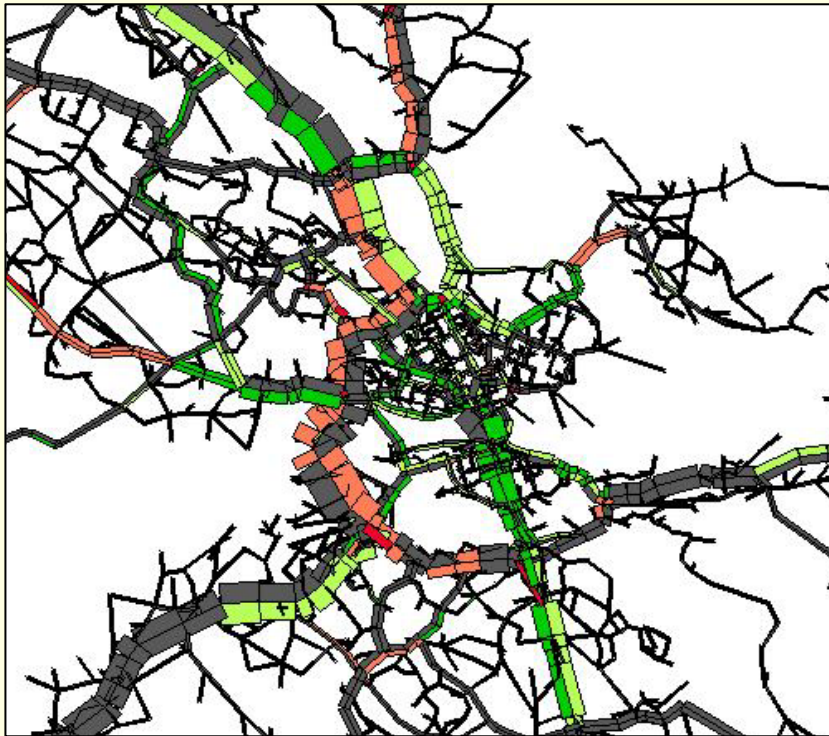
Essingeleden about the same – but Södra länken is worse

Travel time increase on Södra länken due to it being a new road



Effects on travel times – prel. overview

(AM peak)



Where have all the car drivers gone?

What do people do instead?

- Many different strategies – short and long term
- Some make fewer car trips, or change in other ways
- Others make use of the increased accessibility

...we don't have all the answers yet!

Many different adaptation strategies

- Max. half of the car trips show up in public transport
- New park & ride facilities are used – but a small contribution
- Changed departure times not a large effect
- *Several different ways to change travel pattern:*
 - change route
 - change destination
 - trp chaining
- Commercial traffic has also adjusted

Public transport an important part

- Improved public transport alone cannot reduce car traffic
- More passengers, but transit congestion stays about the same – increased supply of transit plays a role
- Buses have higher speeds
- Park & ride spaces have been used
- Bus riders are satisfied with the new buses

...more answers in August.

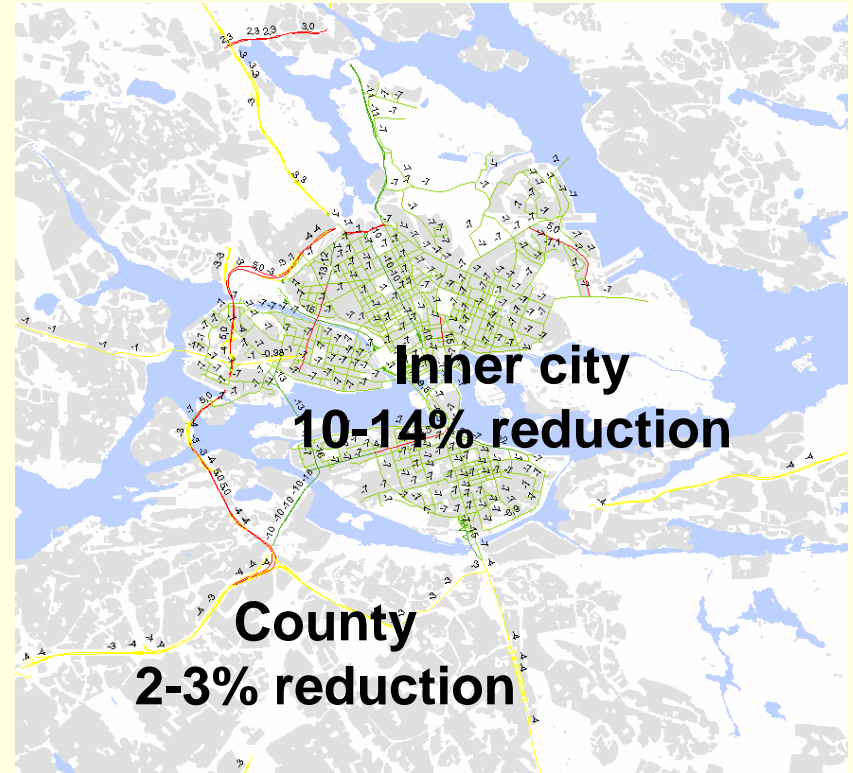
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- Traffic safety
 - Environment
 - Experienced urban environment

Improved traffic safety

- Less traffic means less accidents
- Higher speeds means worse impact but small effect as a whole
- The period is too short for proper analysis of registered accidents
- Estimated reduction of wounded/killed by 5 - 10 % within the charging zone

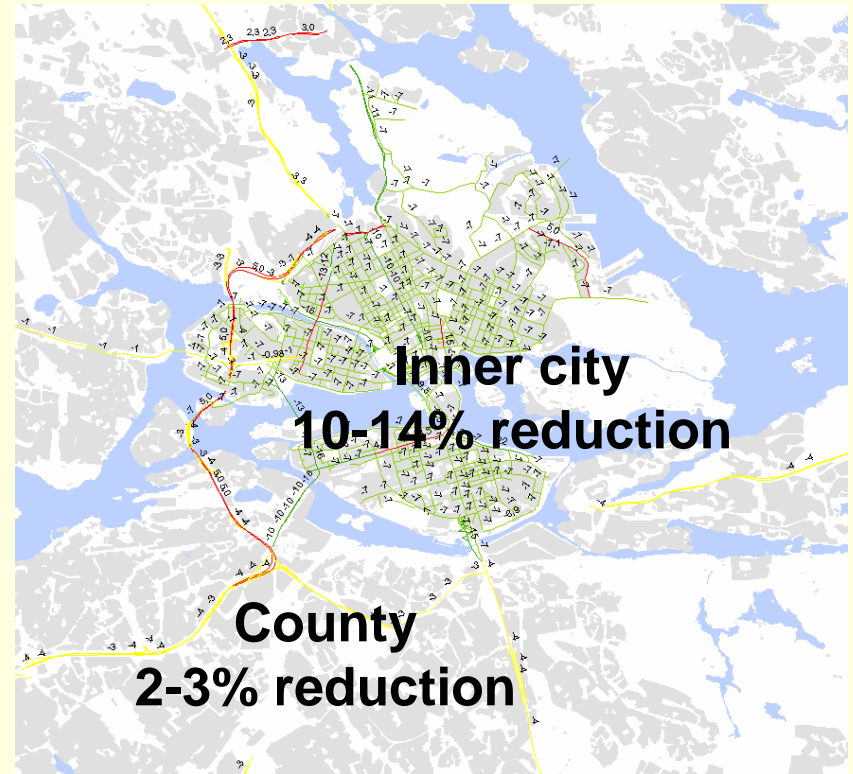
Less carbon dioxide

- Climate effects large for a single measure
- One step towards national climate target



Less emissions improve health

- Emissions are reduced in the "right" area
- According to new findings, as much as 30 premature deaths can be saved (app. 300 living years)





Noise – not much of an effect

- App 1 dBA, and at most 2 dBA
- 3 dBA the limit that can be heard
- BUT the number of disturbed by noise are reduced

Improved urban environment – hard to know...

- Hard to define "good urban environment"
- Hard to measure
- Bad luck with weather conditions

- Perceived air quality, congestion and traffic tempo have improved
- Perceived safety, noise unchanged



Experiencing the trial – attitude surveys

Progressively more positive attitude

- Only 7% of trips in the county are affected by the congestion charge
- Noticable travel time improvments
- The technical system works
- Attitudes towards trial as well as congestion tax more positive
- Fairly/very good decision: 44% → 54%
- Fairly/very bad decision: 51% → 42%

Business sector also more positive now

- From very negative to barely negative, on average
- Administration is a burden
- Shorter travel times valuable

Industry & commerce

- Well-functioning road transport important
 - Time gains valuable, but administration cumbersome
- Marginal influence on land use, real estate prices and regional economy compared to other factors
- No identifiable effects on retail at aggregate level
- Influence on households purchasing power negligible

Cost-benefit analysis of the congestion charges

Shorter, more reliable travel times	590 mkr/year
Paid congestion charges	-760 mkr/year
Health and environment	90 mkr/year
Traffic safety	120 mkr/year
Revenues from congestion charges	760 mkr/year
Other revenues/costs	190 mkr/year
Maintenance and running costs	-220 mkr/year
Net benefit	760 mkr/year
Investment and running costs 2006	-2000 mkr
Shadow prices etc.	-1100 mkr
Total initial cost	-3100 mkr

Payback time: 4 years.

The congestion charge gives a net social surplus – but not the increased bus services

- The congestion charge gives a net social surplus of around 800 mSEK per year
 - The trial is a net social deficit
 - Since the investment is a sunk cost, it's socially profitable to carry on
 - The benefits outweigh the investment cost in 4 years
 - Short "payback time" compared to road/rail investments (typically 15-25 years)
- The new bus services give a net social deficit
 - cost 520 mkr/year, shorter travel times worth 180 mkr/year



Conclusions and summary

Effects are large compared to other measures

- Western ring road: **15 billions**
 - 14% less traffic over the inner city bridges
- Eastern ring road : **20 billions**
 - 11% less traffic over the inner city bridges
- Zero public transport fare: **5 billions per år**
 - 3% less car traffic in the county

- Doesn't make sense to compare investments and congestion charges *against* each other
 - Congestion charge gives a financial surplus of 500 mSEK/year
- Complements, not substitute, both financially and from a traffic management perspective

Lessons learned

- Better public transport cannot reduce road congestion on its own
 - No measurable car traffic reduction

If congestion charge is made permanent:

- Simple zone structure seems to work OK
- Charge levels and time periods can be fine-tuned
- Continue simplification of payment and administration
- Consider seasonal traffic variation
- Charge on Essingeleden?
 - Well: has not become significantly worse than before – so far.

What surprised us?

- ... that the simple charging structure worked so well
- ... that the effects happened and stabilised so quickly
- ... that the congestion reduction could be seen by virtually everybody
- ... the change in attitudes
- ... the many ways to adapt to the charges

International attention



- US' new transport strategy mentions Stockholm as a good example
- **“The demonstrated success of road pricing.**
Other major cities around the world, including London, England and Stockholm, Sweden most recently, have reduced congestion and improved throughput almost immediately through the implementation of congestion pricing strategies.”