

Friday 29th June 2012

Azure Room, South Tower, 13.30 -14.15.

Using GPS technology to better understand the needs of cyclists: a small revolution for cycle planning?

Dr Pelle Envall, CyCity coordinator

CyCity:

**From car-centric to
cycle-centric cities.**

Our research and development objectives

- develop new methods and computer-aided decision support for cycle planning
- collect empirical evidence of the needs of users
- explore improved functionality of online travel planners for cyclists



Some people and partners



Dr Kerstin Robertson
Biology



Mr Michael Koucky
Env. Physics



Dr Pelle Envall
Transport
planning



Dr Anna Niska
Roads & road
maintenance



Dr Sonja Forward
Psychology



Dr Johan Faskunger
Health Science



Mr Martin Emanuel
Historian,
Science & Technology



•Multi-disciplinary

In collaboration with:



CyCity:

Funding:



Key partners:



TUB

Trafikutredningsbyrån

vti

Lead partner:



Today's roundtable

- **What?**
- **Why?**
- **The two cities**
- **Sample**
- **Preliminary findings**
- **Conclusions**
 - **GPS use and study approach**
- **But first...**

CyCity:

Cycling in Sweden, not so different from the rest of the world

- 10 % of trips
- Increase in metropolitan areas
- Country as a whole - flat trend
- Large variation in usage in cities (2- 35 % of local trips)
- Variations only to a relatively little extent explained by hilliness, weather conditions or demographics!
- Stockholm a 'typical' city (with ambitious leadership)
- Fast urbanisation

Overview: route choice study using GPS

- Pre-questionnaire
- Two pilot studies
- Recruitment of cyclists
- Participants cycling with GPS devices
- Short route specific questionnaires
 - Each route
 - Trip purpose and more
- Sophisticated analysis using ArcMap software
- Development of software tool to cut costs
- Work started 2010

Why?

- Many cities want to increase cycling
- Limited knowledge about user preferences (transferability)
 - example: value of time study
- Better decision support and data availability asked after by many transport and urban planners (Scandinavia)

- Implementation problems (globally incl. Europe, see e.g. Gaffron 2003; Kågeson 2009, p.1.)

”Cycling is nine times as space efficient compared to car traffic at some junctions in central Stockholm” *

Public transport even better where flows are significant

Capacity issue constraintuitive

CyCitys fältstudier av cykelstaden. WSP Sverige AB och Spacescape. Daterad 2012-01-19. Tillgänglig här: <http://tiny.cc/hkw1j>

*En majmorgons rusningstimme färdas ca 600 motorfordon och 900 cyklister norrut på Götgatan, mellan Ringvägen och Folkungagatan.

Modal share in central Stockholm 5-10 % of trips.

CyCity:

User preferences



Noise?

Segregated facilities?

Perceived personal security?

Delays, stop and start?

Gradients?

CyCity:

The first two cities

Linköping, Sweden

130 000 inhabitants

Mostly very flat

Pedestrian core

Approx. 27 % modal
share

Ljubljana, Slovenia

270 000 inhabitants

Some significant hills

Pedestrian core

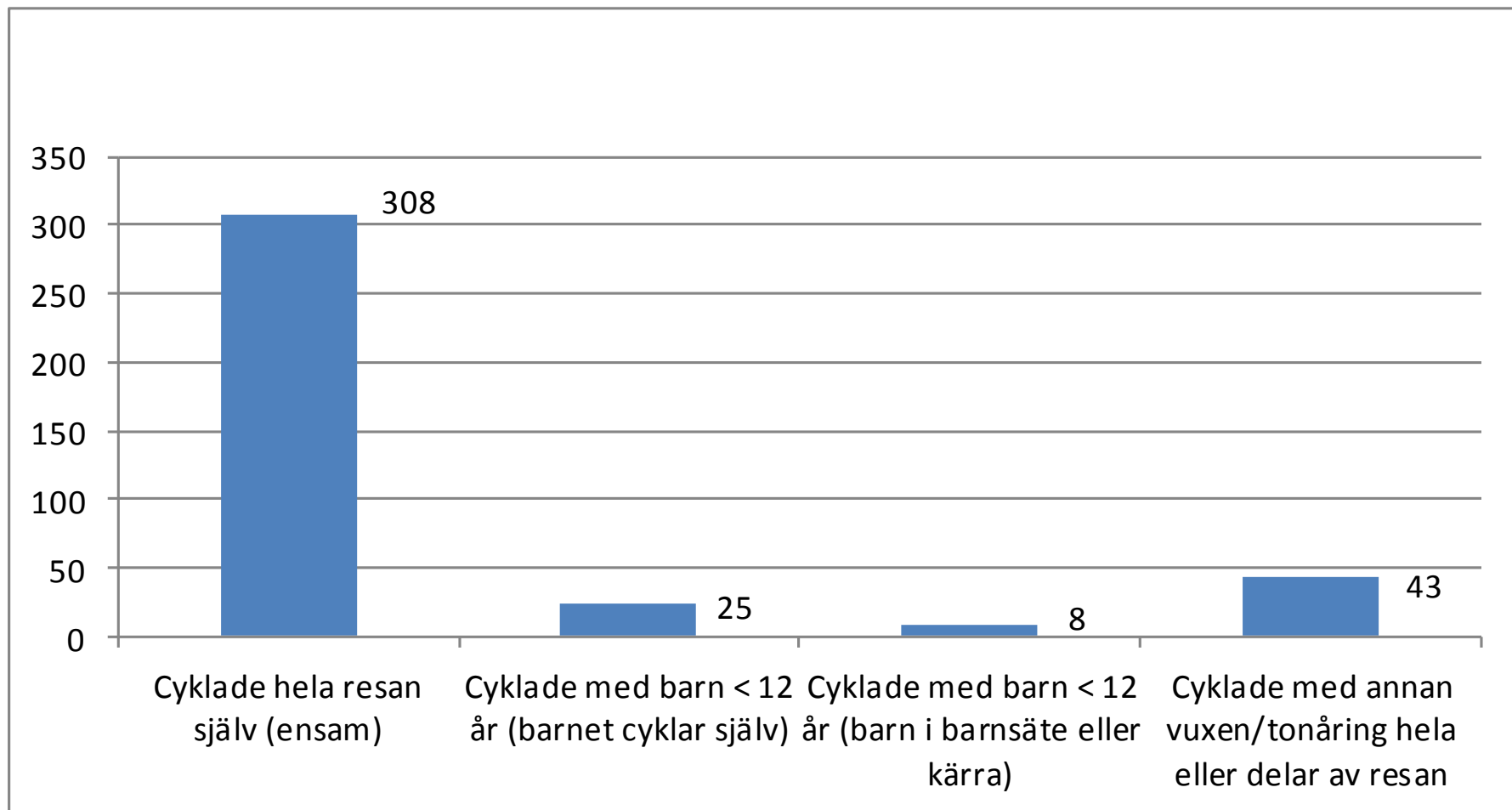
Approx 10 % modal
share

Sample

In each city

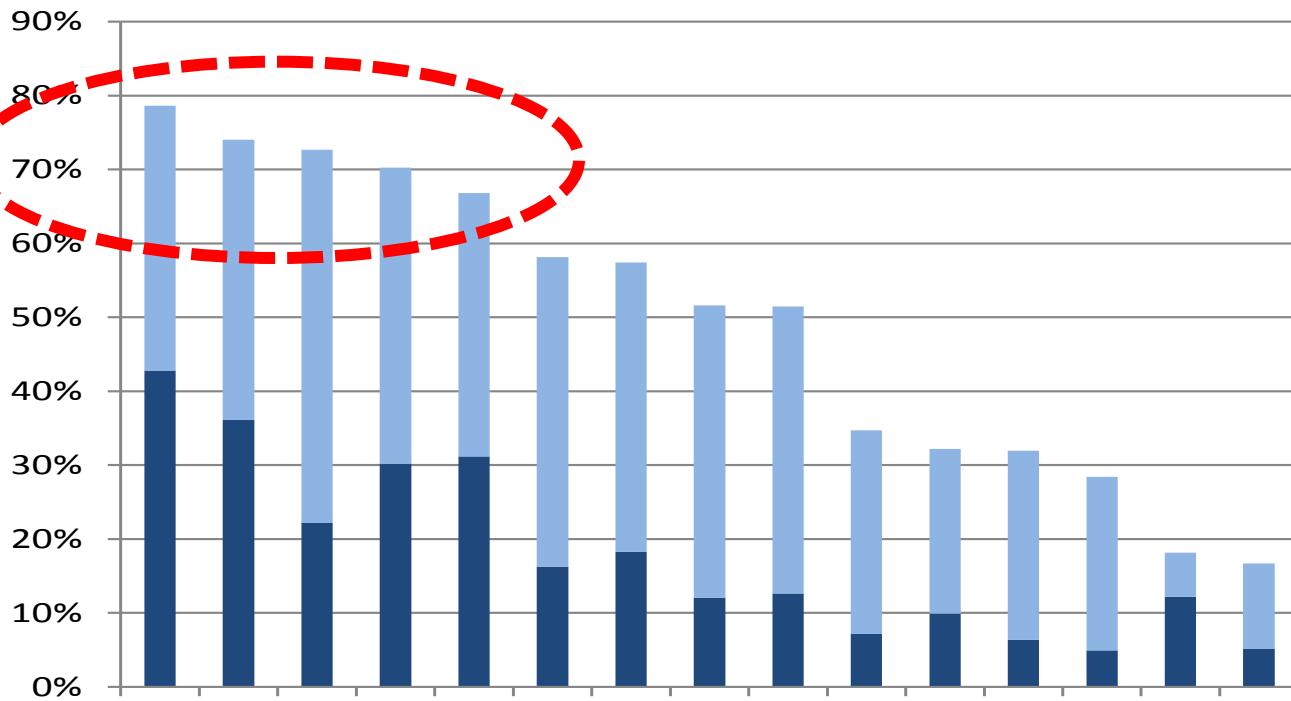
- 100 cyclists
- 400 cycle trips
- Participants recruited at work places
- Main age groups: 20-65 years old
- Approx. 50 % men
- Trips > 1km
- 'Cycle as usual', not cycle trips for fitness purpose only
- Many participants frequent cyclists (Linköping)

Cycling alone or together with someone



Antal av resorna som deltagarna cyklade själva respektive med andra under resa 1 (n 384)

Stated route choice motivations



■ ganska viktigt

■ mycket viktigt

n ~400

Adults

CyCity: Linköping

Many make short stops

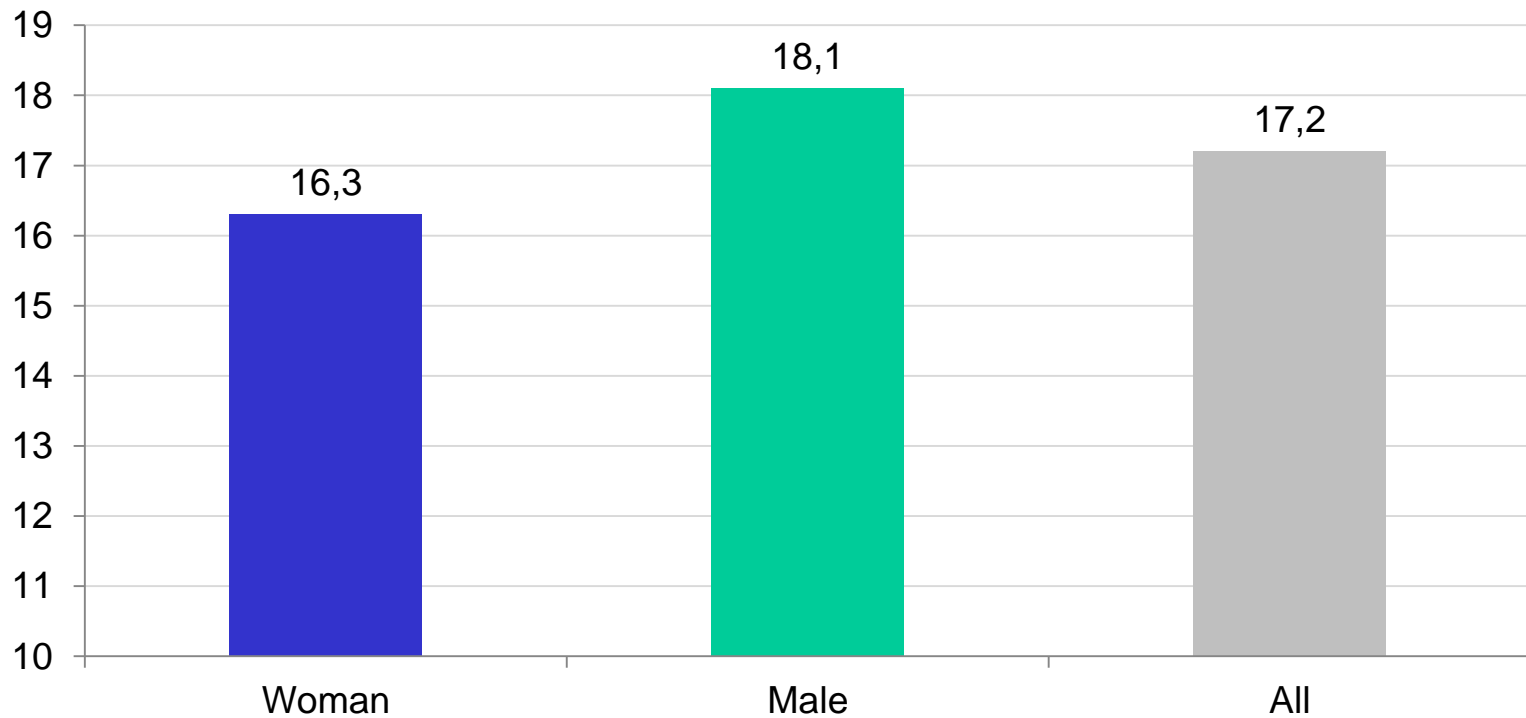


- Every fifth trip involves a short stop to carry out an errand (22 %).
- Shopping common
- No gender difference
- Main streets/ residential streets...

CyCity: Linköping



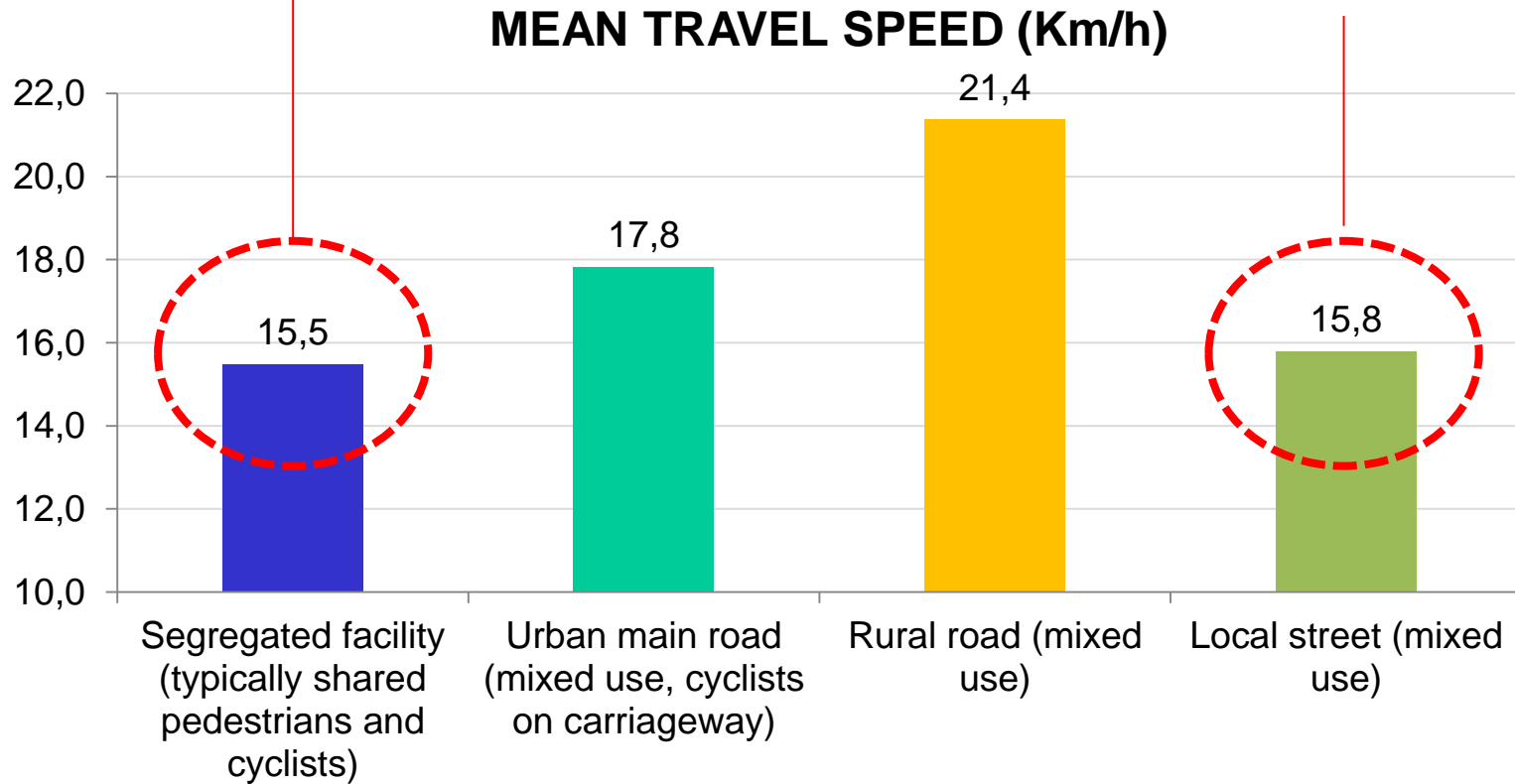
MEAN TRAVEL SPEED (Km/h)





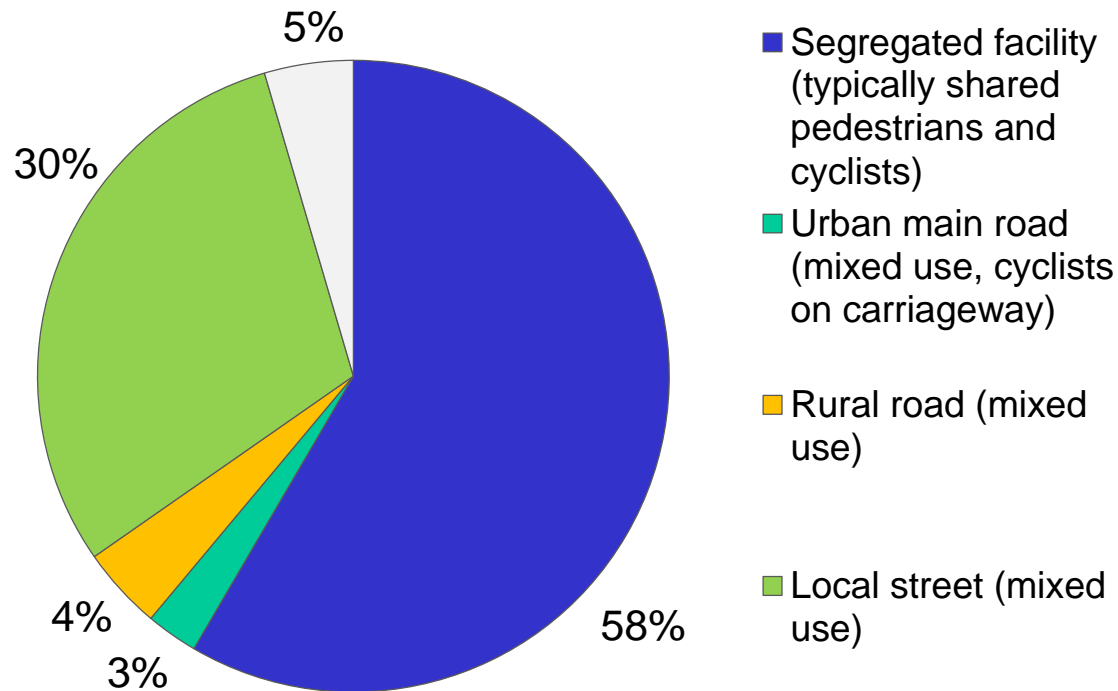
Significant variance...

Higher than key facilities!?



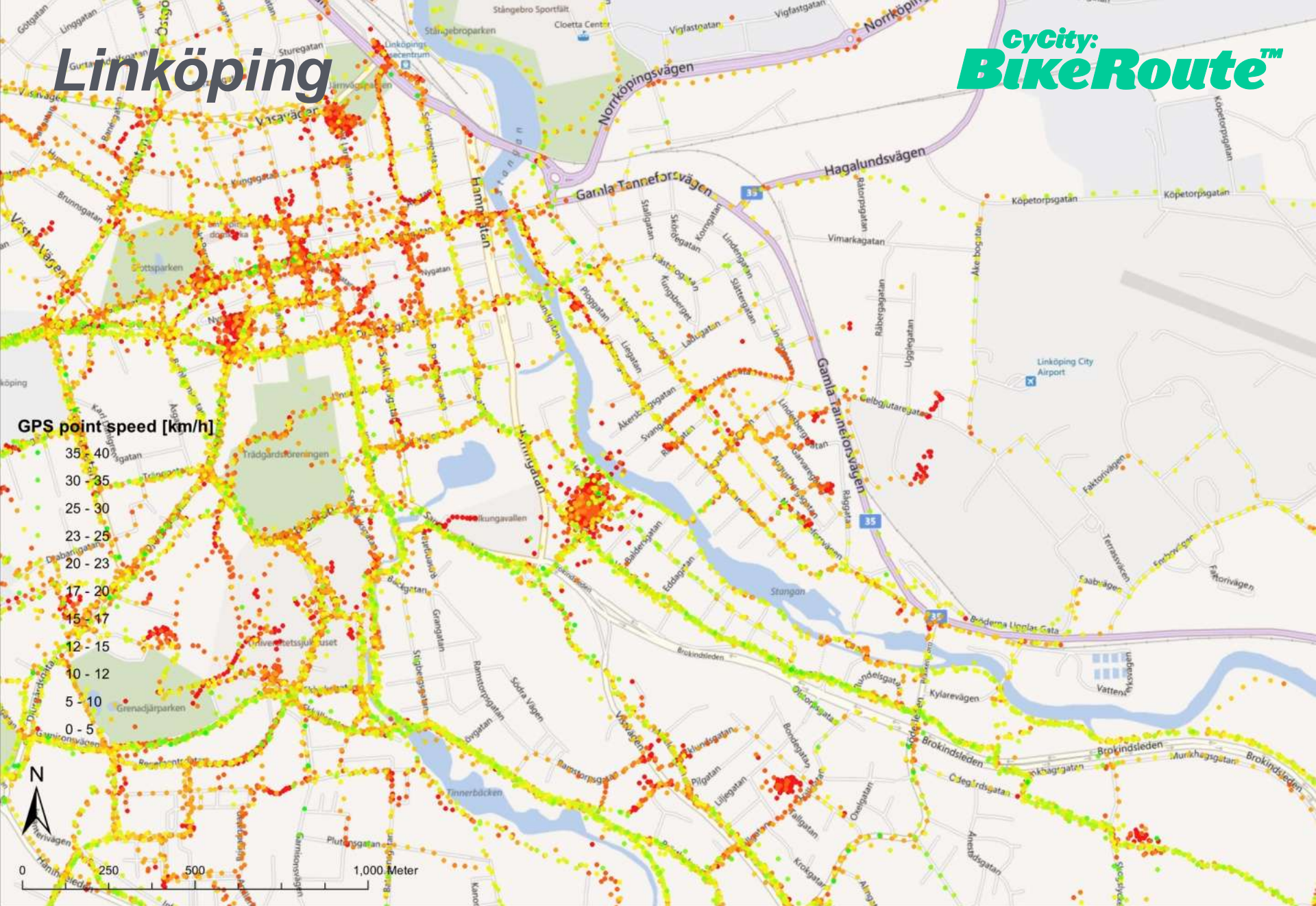


USAGE: EACH TYPE OF FACILITY IN SAMPLE



Linköping

CyCity:
BikeRoute™



Speed, purpose of journey, user satisfaction and more

CyCity:

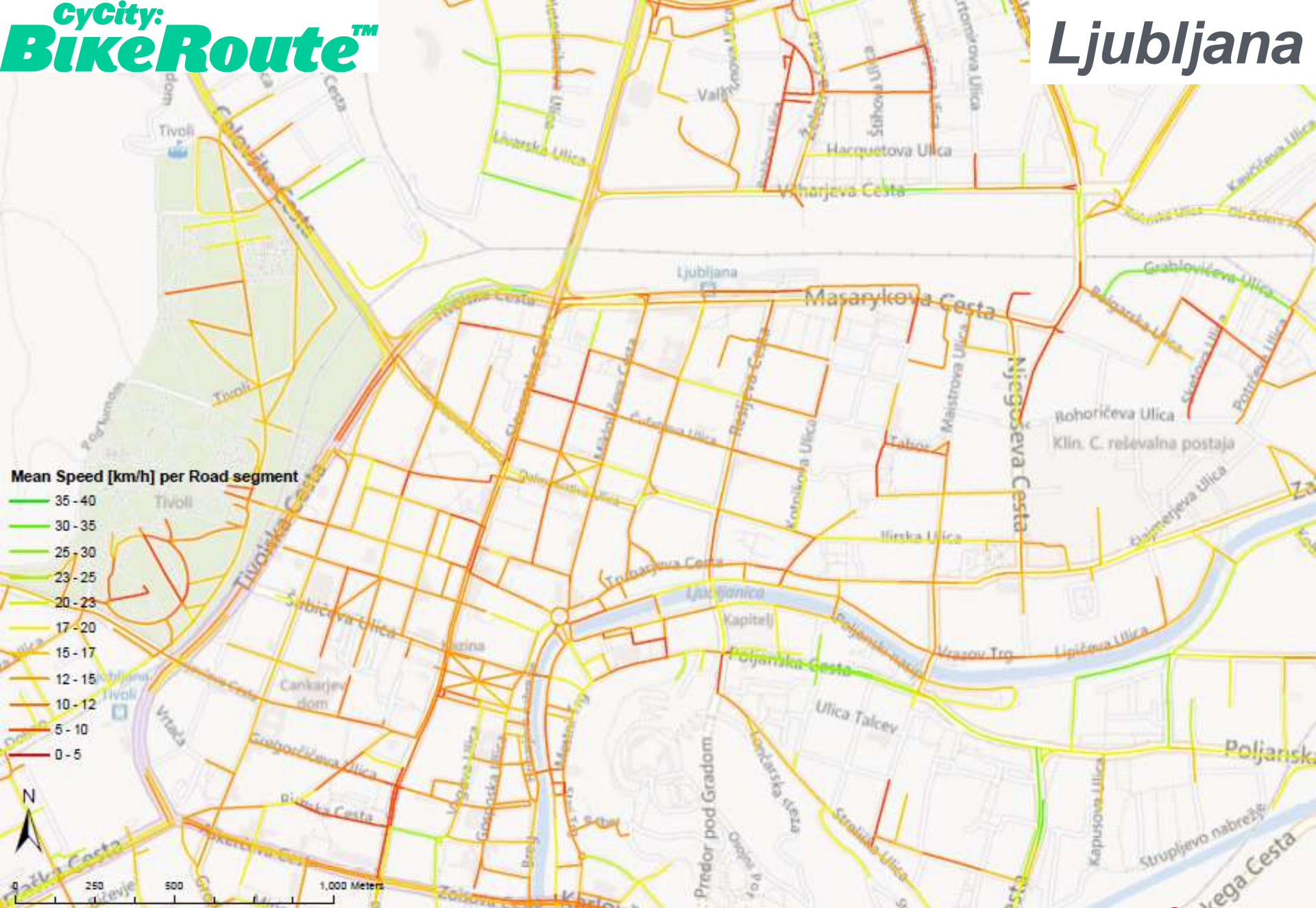
Linköping

CyCity:
BikeRoute™

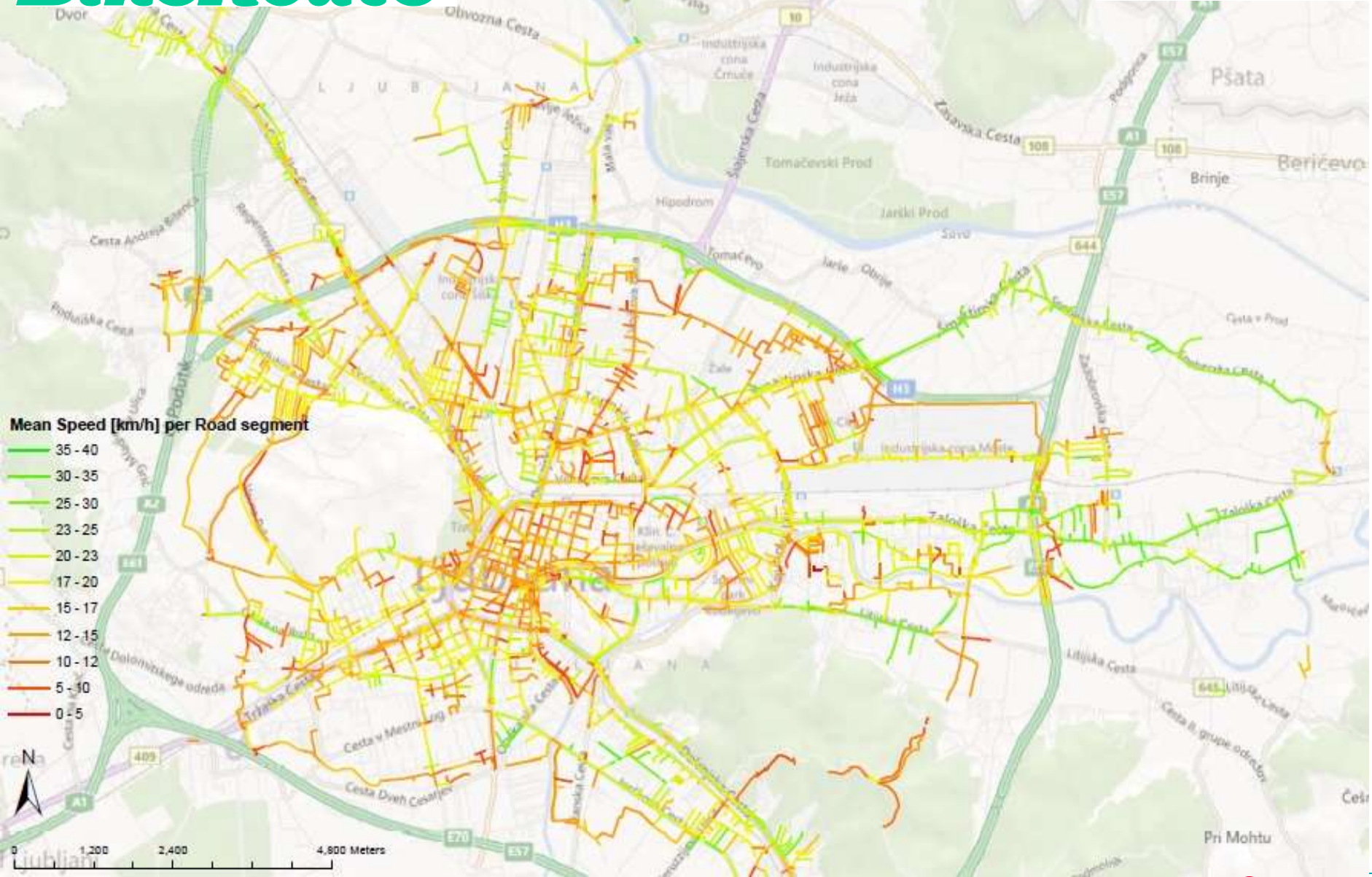


Graphic representations of travel speeds, raw data

CyCity:



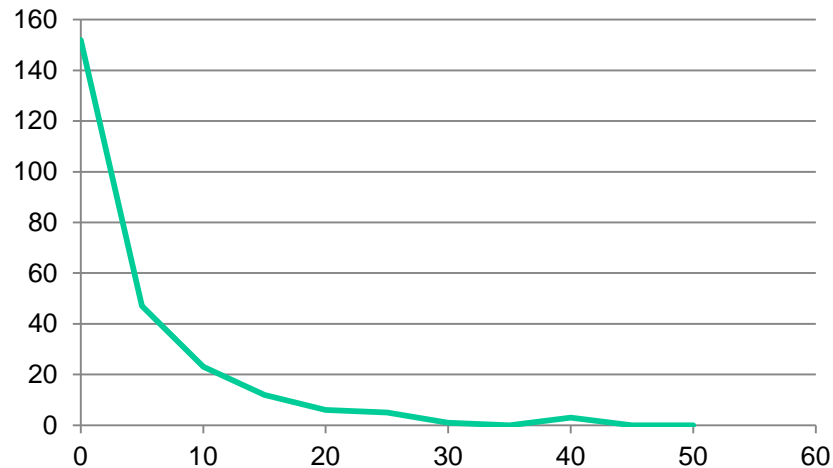
Graphic representations of travel speeds



Graphic representations of travel speeds

First findings: route choice analysis

- ***5- 10% of trips involve a detour of 10 % or more (preliminary)***
- ***Example: 300 m extra compared to shortest available cycle route for a trip that measures 3 km***



Quality issues



*Revealed
preference*



*Online journey
planner*

CyCity:





Conclusions

- New evidence on travel speed vs facility designs, choice of type of facility and importance of detailed design, travel choice and more
- Evaluation of shared cycle tracks for cycling and pedestrians
- Delays
- Further and deeper analysis of detours -> derive user preferences

- Potentially some issues with GPS quality of recordings in dense areas
- We are cutting costs for data collection and analysis as intended!

More information will be published shortly on:

www.cycity.se

Thanks!

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CyCity is....

- Truly multi-disciplinary because cycle planning and implementation requires a number of different skill sets
- going to deliver 12 coordinated sub-studies
- Probably one of Europe's currently largest research and development projects looking into cycle-centric cities and cycle planning
- Committed to cycling but realise that cycling mainly is a means to an end – prosperous and liveable cities.
- Please contact us to get our 2012 findings folder (in English)

www.cycity.se

CyCity:

Funding:



Key partners:



Pro  Activity
www.proactivity.se



TUB

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Lead partner:

