



CiViTAS
Cleaner and better transport in cities



Draft version PA4

Workshop VI, Intelligent Transport systems

"Realtime information, bus priority system, multi-modal travel planning increases passenger usage of public transport "

October 5, 2007

Kaunas, Lithuania

Krister Nordland, Skånetrafiken (PTA)



THE CIVITAS INITIATIVE
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EUROPEAN UNION

"*Realtime* information, bus priority system, *multi-modal* travel planning increases passenger usage of public transport "

Definitions found on Internet:

Real time = Occuring immediately

Multi-modal transport = transport carried out using several modes of transport

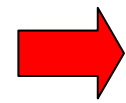
Timetable = a printed brochure, book or card consisting of tables that *indicated* the schedule time of arrival and departure

Kristianstad Stadsbuss 2
ÖSTERÅNG → RESECENTRUM → VÄ/TALLDALEN

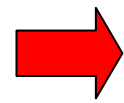
Österångskolan	Resecentrum	Stora Torg	Hälsköviken	Kedjögatan	Västgatan
måndag-fredag					
05.25	05.41	05.43	05.50	05.54	06.04
05.55	06.11	06.13	06.20	06.24	06.34
06.10	06.27	06.29	06.38	06.40	06.50
06.25	06.42	06.44	06.53	06.55	07.05
06.40	06.57	06.59	07.08	07.10	07.20
06.54	07.13	07.15	07.24	07.26	07.37
07.12	07.29	07.31	07.40	07.42	07.53
07.20	07.37	07.39	07.48		
07.27	07.44	07.46	07.55	07.57	08.08
07.35	07.52	07.54	08.03		
07.42	07.59	08.01	08.10	08.12	08.23
07.49	08.06	08.08	08.17		
07.57	08.14	08.16	08.25	08.27	08.38
08.04	08.21	08.23	08.32		
08.12	08.29	08.31	08.40	08.42	08.53
08.27	08.44	08.46	08.55	08.57	09.08
08.42	08.59	09.01	09.10	09.12	09.23
08.57	09.14	09.16	09.25	09.27	09.38
09.12	09.29	09.31	09.40	09.42	09.53
09.27	09.44	09.46	09.55	09.57	10.08
Döroffert på följande minuttal					
47	04	06	15	17	28
07	24	26	35	37	48
27	44	46	55	57	08
13.47	14.04	14.06	14.15	14.17	14.28
13.57	14.14	14.16	14.25		
14.07	14.24	14.26	14.35	14.37	14.48
14.17	14.34	14.36	14.45		
14.27	14.44	14.46	14.55	14.57	15.08
14.37	14.54	14.56	15.05		
14.47	15.04	15.06	15.15	15.17	15.28
Döroffert på följande minuttal					
54	11	13	22		
02	19	21	30	32	43
09	26	28	37		
17	34	36	45	47	58
24	41	43	52		
32	49	51	00	02	13
39	56	58	07		
47	04	06	15	17	28
16.54	17.11	17.13	17.22		
17.02	17.19	17.21	17.30	17.32	17.43



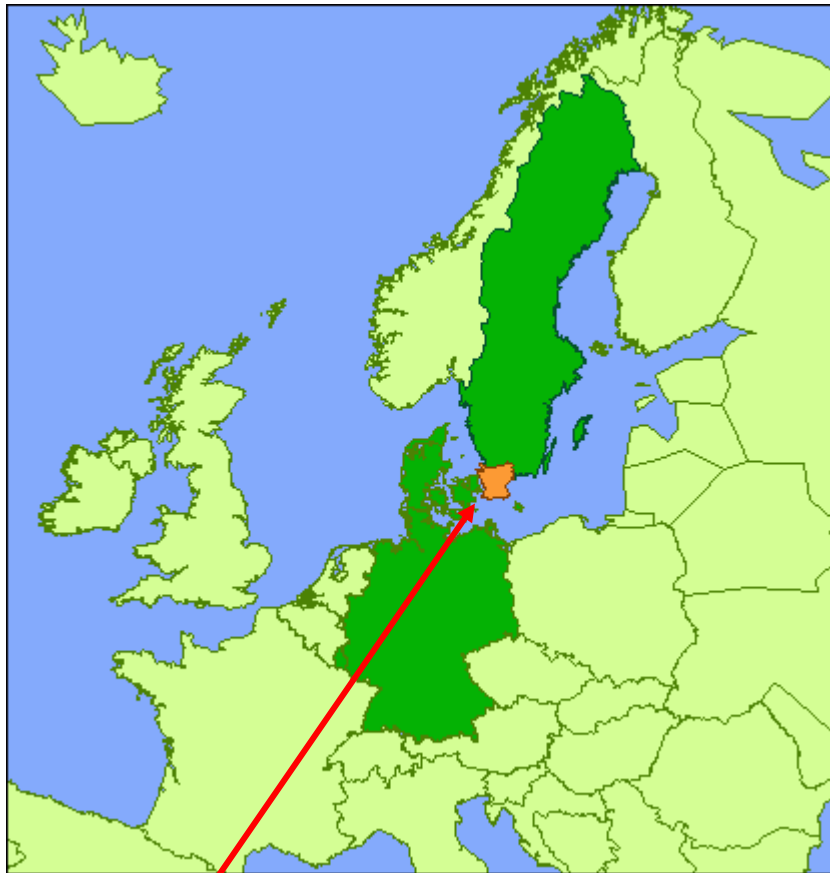
Printed/paper
(1-4 times/year)



Mechanical
(1-10 times/hour)



Electronic signs
(60-120 times/hour)



Skåne/Scania/Schonen
1,1 million people



Some facts about Skånetrafiken

- **Established 1999**
- **113 million journeys a year (2006)**
- **Strong increase in travel (+10% in 2006)**
- **Owned by Region Skåne**
- **Politically governed – on a commercial market**
- **Almost 8 out of 10 customers are satisfied**
- **Strong products - e.g. Pågatågen, SkåneExpressen**
- **Entrepreneurs operate the services**
- **66 trains, 550 regional buses, 325 city buses**
- **Income 65% passengers, 35% Region Skåne**
- **Turnover MSEK 2,400 (2006) = 260 M euro**



How to increase number of journeys ?

Measures / value words

- Traffic (line frequency, bus quality ...)
- **Safety** (cameras, security strategy)
- **Simplicity** (easy to get timetable info including traffic disturbances) = web, mobile, IVR (voice recognition, realtime signs)
- **Demanded traffic** (get from statistics)
- **Accessibility** (bus lanes, bus priority system)
- **Reliability** (punctionality=AVL system)



Improved security / safety on buses

- Security/Safety strategy
- Surveillance cameras installed on all Malmö city buses and some regional buses
- **200 Questionnaires, Malmö may 2007**

	Yes	No		
Knowledge of cameras	75%	25%		
	Yes, much	Yes, little	As before	Worse
Improved security	13%	53%	35%	0%
	Yes, much	Yes, little	As before	
Cameras means more travelling	3%	13%	85%	



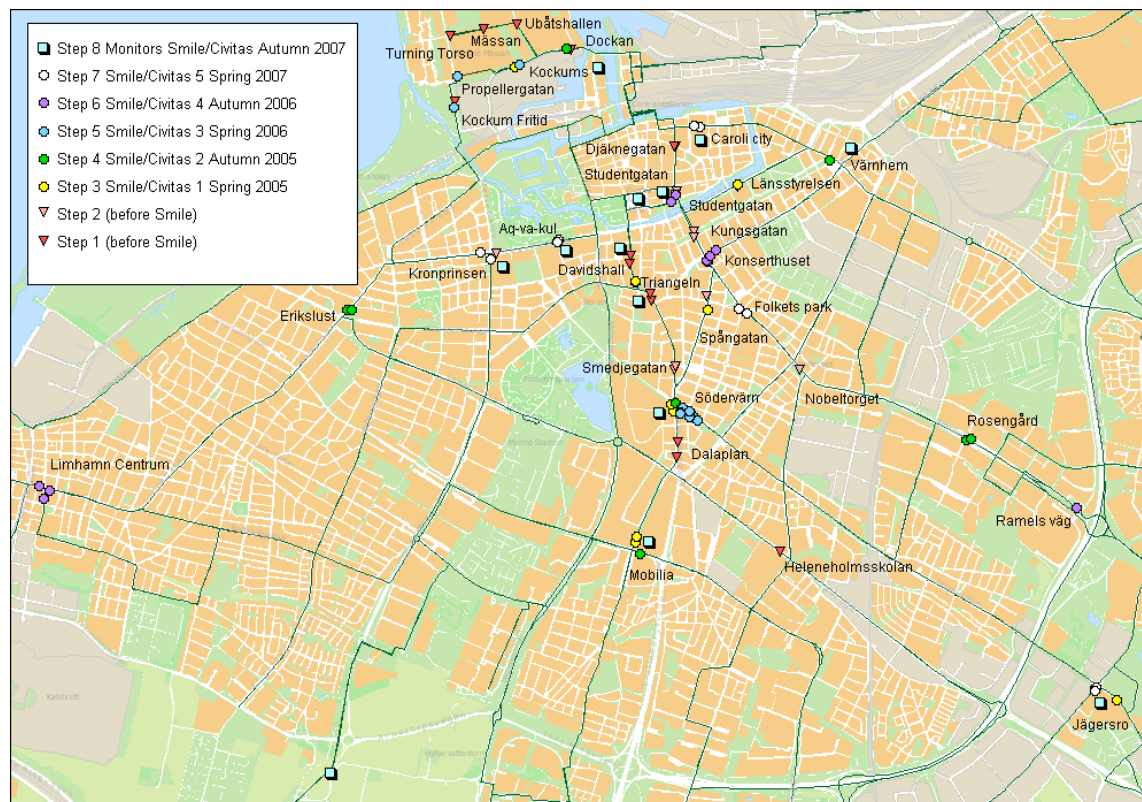
Person profiles, 159 answers (200 Questionnaires, Malmö may 2007)

Age	Number		Mobile phone	
			Yes	No
Below 18	38	23,9%	38	0
19-25	29	18,2%	28	1
26-45	43	27,0%	42	1
46-64	22	13,8%	18	4
Above 65	13	8,2%	10	3
Unknown age	14	8,8%		
Total	159	100,0%	136	9

Sex:	Male	60	37,7%
	Female	88	55,3%
	Unknown	11	6,9%
	Total	159	100,0%



Simplicity – 50 new real time signs in Malmö (20 existed before Civitas project)



Real time signs in Malmö

200 Questionnaires, Malmö may 2007

	Totally correct	Partly correct	Not correct
RT signs hard to understand	3%	16%	80%
Buses in Malmö are punctual	7%	73%	21%
RT signs not correct	9%	54%	37%
RT signs replaces printed timetable	18%	50%	31%
RT signs give higher quality	17%	50%	33%
RT signs make me travel more	8%	18%	74%



Mobile services in connection with travel planning /real time information

- Wap (general, no logg-in)
- Java (premium, personalized, logg-in)
- New functionality (winter 2007/2008)
- Maps
- Information messages (general)
- Traffic disturbances (per line, per stop, geo. area)
- Mobile ticket connected to mobile travel planner
- EU-Spirit travel searches
- Personalized commuter timetable

Skånetrafiken

Välkommen!

Välj tjänst nedan:

▸ Reseplaneraren

▸ Hållplats

Min nästa resa

▸ Hem - Staden

▸ Staden - Hem

▸ Kristianstad - Hässleholm

▸ Hässleholm - Kristianstad

▸ Hem - Hässleholm

▸ Hässleholm - Hem

▸ Malmö - Lund

Välj

15:05

Avsluta

Mobile services in connection with travel planning /real time information

Mobile services:	Totally correct	Partly correct	Don't know	Not correct
are nothing for me	26%	22%	28%	24%
are hard to use	5%	16%	51%	28%
are expensive	18%	20%	50%	12%
replaces printed timetable	5%	12%	42%	41%
increases quality of journey	3%	17%	42%	39%
makes me travel more	1%	3%	30%	66%
valueable to know bus late	66%	21%	8%	6%

Skånetrafiken

Malmö C - CELSIUSGATAN
2A MALMÖ

Datum: 070423

Avg	Ank	Byt	Restid
15:08	15:24	0	00:16
15:12	15:28	0	00:16 ⚠
15:13	15:29	0	00:16 ⚠
15:18	15:34	0	00:16
15:20	15:36	0	00:16 ⚠
15:23	15:39	0	00:16
15:27	15:42	0	00:15
15:28	15:44	0	00:16 ⚠

◀Retur ▶Tidigare Senare▶

Välj 15:13 Backa

Skånetrafiken

Malmö C - CELSIUSGATAN
2A MALMÖ

Datum: 070423

Restid: 00:16

🚍 Stadsbuss 3
Malmö C - Malmö Värnhem
Läge: B
Riktning: Ringlinjen via Värnhem
Avg: 15:12
Ank: 15:20 ⚠Ny: 15:18

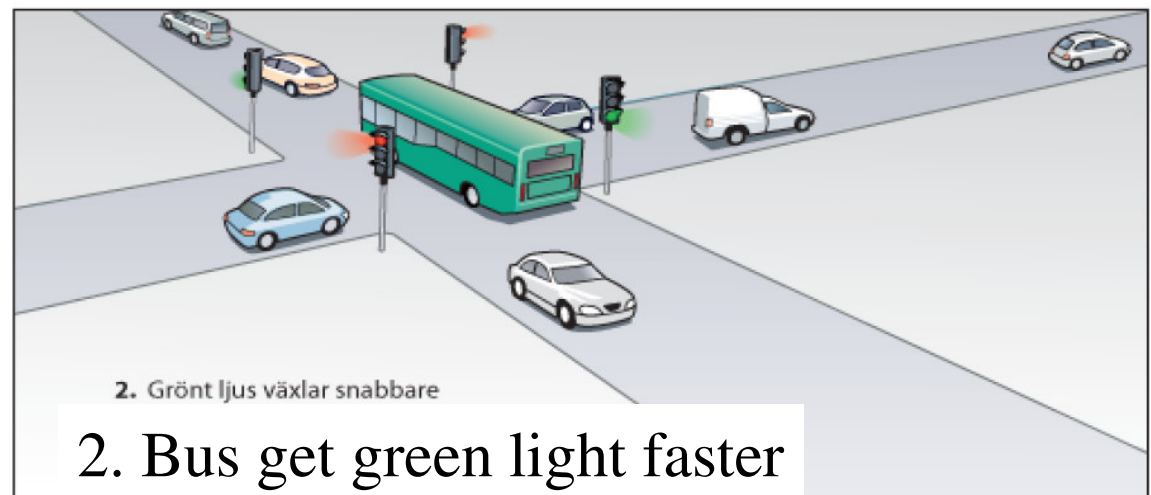
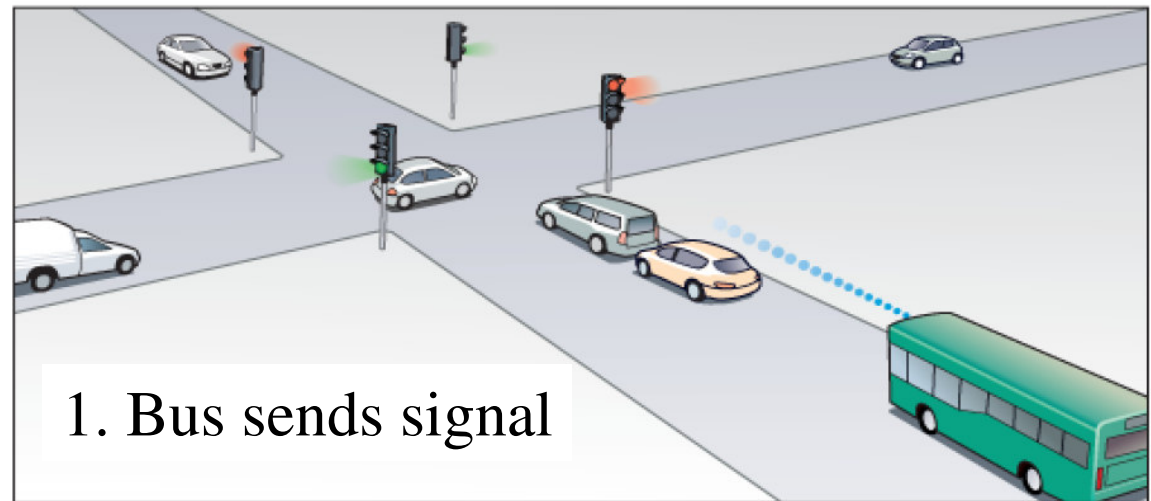
🚶 Gång
Malmö Värnhem -
CELSIUSGATAN 2A MALMÖ

15:14 Backa

Accessibility

Bus priority system

- Approaching a traffic light....
- Open supplier-independent bus priority protocol
- Will be used by both Malmö city buses and regional buses passing through Malmö



42 street crossings in Malmö will get bus priority



Realtime information, bus priority system, multi-modal travel planning increases passenger usage of Public Transport

CiViTAS

Street crossing passages are defined

Geography defined:
Send pre-request (booking)
Send request (on)
Send completed (off)

Välj och redigera korsning
80023 - Malmö Aml 23 Redigera/ny

Tabellperioder
Visa endast aktuella tabellperioder ☒
267 - Malmö stad sommar 2007
277 - Stadsbuss Trelleborg 17 juni 2007 -
288 - Stadsbuss Ystad 17 juni 2007 - 14 ju
298 - Stadsbuss Eslöv 17 juni 2007 - 14 ju
268 - Malmö stad vinter 2007-2008
Beräkna

Id	Linje	Hplnr1	Hplnam1	Lage1	Hplnr2	Hplnam2	Lage2	Prickod	Ikön	Pre_meter
268	2	80606	Helenetorpsgången	B	80605	Eriksfält	C	9	↶	0
268	2	80636	Vandrarhemmet	B	80605	Eriksfält	A	10	↷	0
268	8	80620	Heleneholmskolan	A	80605	Eriksfält	D	3	↵	0
268	8	80639	Nydalatorget	B	80605	Eriksfält	B	4	↶	0
268	84	80606	Helenetorpsgången	B	80605	Eriksfält	C	9	↶	0

REBUS Kartmodul - Signalprio

Arkiv Verktyg Inställningar Hjälp

MapXtreme 2005 © SDK Developer License. © 2006 MapRun.Com

Signalprio

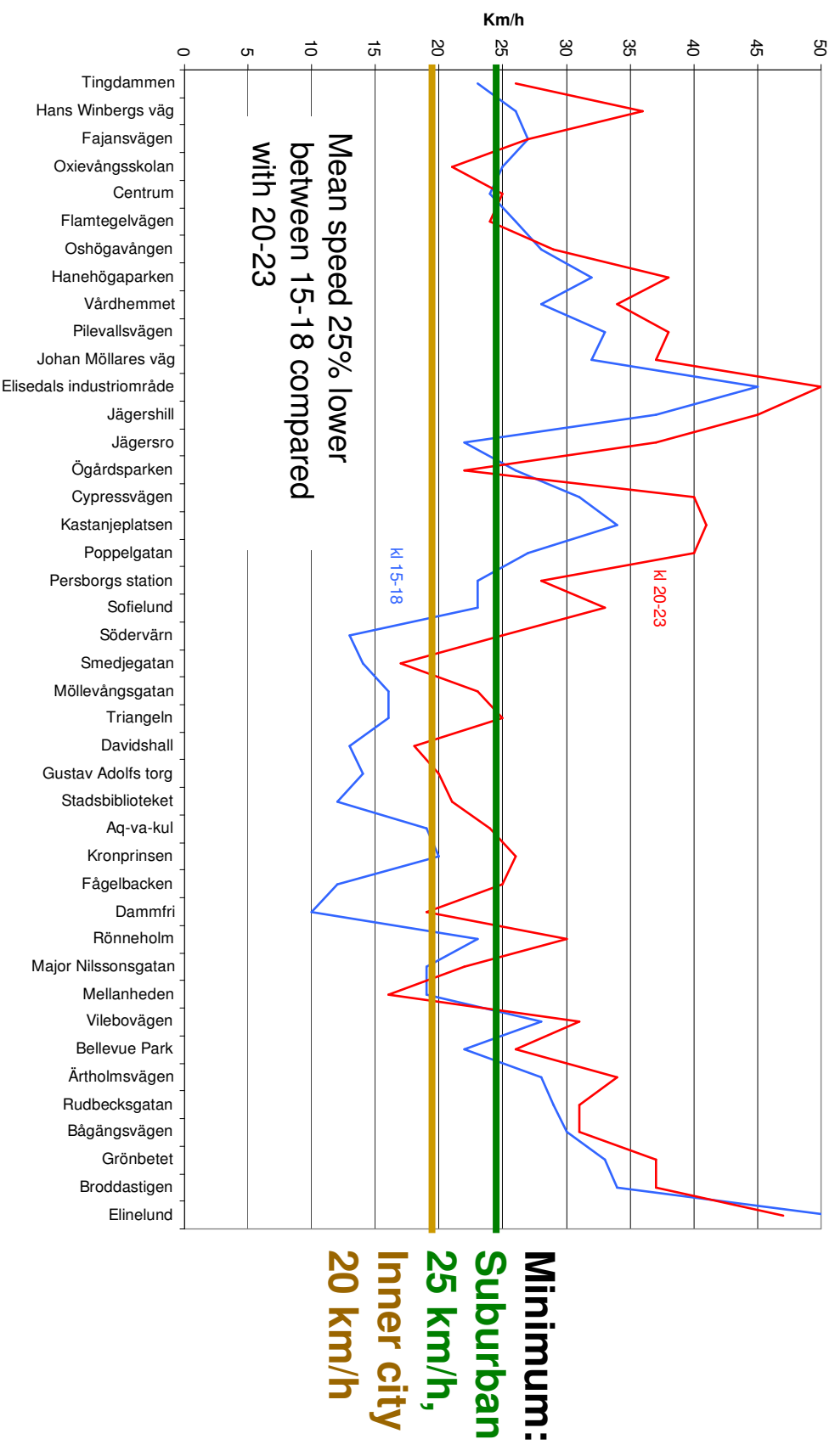
Geometrier i kartan

- Avsignal länk 80606:B - 80605:C
- Cavst - 80023
- Hållplats 80605:C - Eriksfält
- Hållplats 80606:B - Helenetorpsgången
- Korsningspunkt 80023
- Länk 80606:B - 80605:C
- PrefAAvst - 80023
- PrefPAvst - 80023
- Påsignal länk 80606:B - 80605:C



Comparison bus mean speed at high / Low traffic Bus priority improvements

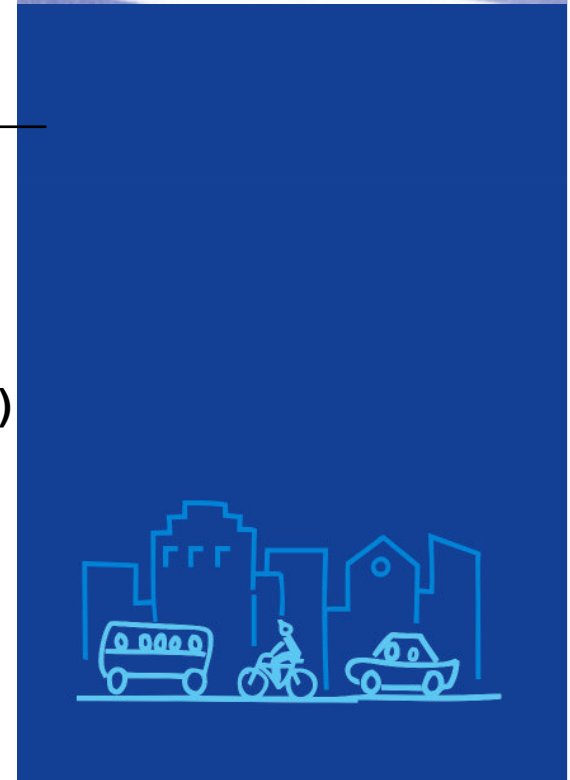
Medelhastighet per körsträcka, linje 1 mellan kl 15-18 respektive kl 20-23 den 16/11 2006



Travel planner:

Analysing the importance of realtime looking at the search-time and travel request time

	Real time info important !			Questions/day
	0-1 h	1-2 days	> 2 days	
Web	30%	40%	30%	70.000 / day
Mobile	90%	ca 9 %	Ca 1%	2.000 / day (My pages)
IVR Voice recognition	70%	20%	10%	5.000 / day



Skånetrafikens

Start | **Timetables** | Tickets | Contact | About Skånetrafikens | Around the Sound

Sökväg: Timetables > Travelplanner

Reseplaneraren
Svenska Svenska Deutsch Dansk English

Help | New Search | Edit search | Save as Pre-defined journey | Print

Overview | **Itinerary** | Detailed itinerary | Personal timetable | Itinerary on map

Searched journey: Malmö Gustav Adolfs torg - Malmö Södervärn

Fare: Adult regular

Alternativ 1 Day of travel: 2007-09-29 Duration: 00:07 Fare: 15,00 SEK Changes: 0 No. of fare stages: 1

Line	From -> To	Time	Traffic info	Comments
6	Malmö Gustav Adolfs torg -> Malmö Södervärn	Dep: 09:42 Arr: 09:49	Left 09:44 Late 1 min	

Alternativ 2 Day of travel: 2007-09-29 Duration: 00:07 Fare: 15,00 SEK Changes: 0 No. of fare stages: 1

Line	From -> To	Time	Traffic info	Comments
1	Malmö C - CELSIUSGATAN 2A MALMÖ	Dep: 09:46 Arr: 09:53	Late 3 min Late 1 min	

Skånetrafikens

Return Trip

Times in italics are

Selected means

Traffic Information
By dialling +46 1 get straight thro information kno information adv Here you can: o

Stadsbuss 3
Malmö C - Malmö Värnhem
Läge: B
Riktning: Ringlinjen via Värnhem
Avg: 15:12
Ank: 15:20 **▲Ny: 15:18**

Gång
Malmö Värnhem -
CELSIUSGATAN 2A MALMÖ

15:14 Backa

How long is my jo take?
We present journ public transport a [Read more about](#)

Stop	Time	Traffic info	No
Malmö Elinelund	Dep: 09:30	Left 09:30	
Malmö Broddastigen	Dep: 09:30	Left 09:31	
Malmö Grönbetet	Dep: 09:31	Left 09:32	
Malmö Bågångsvägen	Dep: 09:32	Left 09:33	
Malmö Rudbecksgatan	Dep: 09:32	Left 09:34	
Malmö Ärtholmsvägen	Dep: 09:33	Left 09:34	
Malmö Bellevue Park	Dep: 09:34	Left 09:35	
Malmö Vilebovägen	Dep: 09:35	Left 09:35	
Malmö Mellanheden	Dep: 09:36	Left 09:37	
Malmö Major Nilssonsgatan	Dep: 09:37	Left 09:38	
Malmö Rönneholm	Dep: 09:38	Left 09:40	
Malmö Dammfri	Dep: 09:39	Left 09:41	
Malmö Fågelbacken	Dep: 09:40	Left 09:43	
Malmö Kronprinsen	Dep: 09:41	Left 09:45	
Malmö Aq-va-kul	Dep: 09:42	Left 09:46	
Malmö Stadsbiblioteket	Dep: 09:44	Late 3 min	
Malmö Gustav Adolfs torg	Dep: 09:46	Late 3 min	
Malmö Davidshall	Dep: 09:48	Late 2 min	
Malmö Triangeln	Dep: 09:49	Late 3 min	
Malmö Möllevångsgatan	Dep: 09:51	Late 2 min	
Malmö Smedjegatan	Dep: 09:51	Late 2 min	
Malmö Södervärn	Dep: 09:53	Late 2 min	
Malmö Sofielund	Dep: 09:55	Late 3 min	
Malmö Persborgs station	Dep: 09:57	Late 2 min	
Malmö Poppelgatan	Dep: 09:58	Late 3 min	
Malmö Kastanjeplatsen	Dep: 09:58	Late 3 min	

Comparing different traffic modes

Reseplaneraren
Svenska Svenska
Deutsch Deutsch
English English

Help | New Search | Edit search | Save as Pre-defined journey | Print

Overview Itinerary Detailed itinerary Personal timetable Itinerary on map

Searched journey: Lund C - Andra avenyen 7 hässleholm

Select the preferred routes and click on a tab above for more information

Day of travel	Dep	Arr	Duration	Changes	Selected means of transport	Fare	Traffic info	Travel info
<input checked="" type="checkbox"/> 2007-09-29	09:42	10:24	00:42	0		84,00 SEK		
<input type="checkbox"/> 2007-09-29	10:02	10:44	00:42	0		84,00 SEK		
<input type="checkbox"/> 2007-09-29	10:42	11:24	00:42	0		84,00 SEK		
<input type="checkbox"/> 2007-09-29	11:42	12:24	00:42	0		84,00 SEK		
<input type="checkbox"/> 2007-09-29	09:48	10:48	01:00*	0		214,20 SEK*		

Return Trip Earlier journeys Later journeys

Times in italics are estimated times. They vary by about 1-5 mins at stops.

Selected means of transport: Stadsbuss, Regionbuss, Tåg, Färjeförbindelse, Flygbuss, Bil

Traffic Information

By dialling +46 771-77 77 77 you can get straight through to the Traffic information knowledgeable advisers. Here you can: obtain information on times, lines, routes and prices obtain information on traffic disruptions receive help in finding lost property

Real-time traffic information

The column, Trafficinfo, displays time discrepancies and cancelled departures. Our real-time information is yet incomplete. All timetable deviations will not be displayed.

A red triangle indicates a cancelled departure, a delay greater than 5 minutes or a departure less than 1

How long is my journey going to take?

We present journey times for both public transport and travel by car. [Read more about the journey planner](#)

All travel has a greater or lesser impact on the environment. The environmental impact for all travel

Detailed itinerary Personal timetable Itinerary on map

Andra avenyen 7 hässleholm

Fare: Adult regular

From -> To	Time	Traffic info	Comments
Lund C	Dep: 09:42		Left 09:42
Eslövs station	09:52		
Höör station	10:02		
-> Hässleholm C	Arr: 10:16		Direction: Karlskrona
Hässelholm C	Dep: 10:16		Crow-fly distance: 272 m
-> Andra avenyen 7 hässleholm	Arr: 10:24		

Duration: 01:00* (No disruptions reported) Fare: 214,20 SEK*

From -> To	Time	Traffic info	Distance
Lund C	Dep: 09:48		0,5 km
			0,5 km
			1,4 km
			0,9 km
			20,1 km
			45,0 km
			2,7 km
			0,2 km
-> Andra avenyen 7 hässleholm	Arr: 10:48		0,1 km
*Parking will be added			Time and cost will be added
Total distance: 71,4 km			För mer info se trafiken.nu

Return Trip Earlier journeys Later journeys

Time, Cost, Environment

Multi-modal: walk, bus, train, ferry, plane and soon also bike

Help ▸ | New Search ▸ | Quick Search ▸

Reseplaneraren
Svenska Dansk
Deutsch English

Advanced Search

1 Starting point and destination

From:

Choose from: Index | Map

Region:

☐ Stop ☒ Address ☐ Point of interest

To:

Town:

Region:

☒ Stop ☐ Address ☐ Point of interest

2 Time and date

Departure
(HHMM)

4

Calendar

Year:

Journeys can be searched until 2007-11-01

3 Means of transport

- ☒ Superspeed train
- ☒ Highspeed train (e.g. X 2000)
- ☒ Intercity train (e.g. Öresundståg)
- ☒ Local train (e.g. Pågatåg)
- ☒ Local bus
- ☒ Regional bus
- ☒ Ferry
- ☒ Walk
- ☒ Plane

[Deselect all](#)

Search

Multi-modal (and seamless) travel planning (example : Skånetrafiken office (adress) – Vilnius airport

Overview Itinerary Detailed itinerary Personal timetable Itinerary on map

Searched journey: **ANDRA AVENYEN 7 HÄSSLEHOLM - Vilnius Airport**

Alternativ 1 Day of travel: 2007-10-04 Duration: 04:31 Changes: 3 Fare: No price info. [Map](#)

Line	From -> To	Time	Traffic info	Comments
Gång	ANDRA AVENYEN 7 HÄSSLEHOLM -> Hässleholm C	Dep: 07-10-04 06:34 Arr: 07-10-04 06:42		
Öresundståg 1025	Hässleholm C -> København Lufth/Kastrup	Dep: 07-10-04 06:42 Arr: 07-10-04 08:04		1
Gång	København Lufth/Kastrup -> Copenhagen Airport	Dep: 07-10-04 08:04 Arr: 07-10-04 09:34		
BT 162	Copenhagen Airport -> Vilnius Airport	Dep: 07-10-04 09:35 Arr: 07-10-04 12:05		

1 6 Cykel får ej medtages

Alternativ 3 Day of travel: 2007-10-04 Duration: 05:01 Changes: 3 Fare: No price info. [Map](#)

Line	From -> To	Time	Traffic info	Comments
Gång	ANDRA AVENYEN 7 HÄSSLEHOLM -> Hässleholm C	Dep: 07-10-04 11:34 Arr: 07-10-04 11:42		
Öresundståg 1055	Hässleholm C -> København Lufth/Kastrup	Dep: 07-10-04 11:42 Arr: 07-10-04 13:04		
Gång	København Lufth/Kastrup -> Copenhagen Airport	Dep: 07-10-04 13:04 Arr: 07-10-04 14:34		
BT 164	Copenhagen Airport -> Vilnius Airport	Dep: 07-10-04 15:05 Arr: 07-10-04 17:35		

Return Trip Earlier journeys Later journeys

Date according to yyyy-mm-dd

Selected means of transport: Superspeed train, Highspeed train (e.g. X 2000), Intercity train (e.g. Öresundståg), Local train (e.g. Pågatåg), Local bus, Regional bus, Ferry, Walk, Plane,

Traffic Information
By dialling +46 771-77 77 77 you can

Real-time traffic information
The column, Traffic info, displays

EU-SPiRiT

Reseplaneraren

help

Searched journey: **ANDRA AVENYEN 7 HÄSSLEHOLM - Vilnius Airport**
Valid: 2007-10-04

Cartmaterial Skåne: © Kommunerna i Skåne/Lantmäteriet © 2005 Skånetrafiken
Cartmaterial Europa: © ESRI Data

Reseplaneraren

help

Searched journey: **ANDRA AVENYEN 7 HÄSSLEHOLM - Vilnius Airport**
Valid: 2007-10-04

Cartmaterial Skåne: © Kommunerna i Skåne/Lantmäteriet © 2005 Skånetrafiken
Cartmaterial Europa: © ESRI Data

Also see www.eu-spirit.com

Summary – increasing passenger usage at Skånetrafiken

- **Phase 1: Improve the traffic** (1999-2004)
- **Phase 2: Improve functionality around actual traffic:** safety, simplicity/realtime, accessibility, reliability (2005-2010)
- **Phase 3: Improve infrastructure**
Today 120 Mill. journeys + 6% increase =
500 Mill. Journeys by 2037 (4 times of today)
=> State infrastructure investments (= double all rails plus PT roads)
=> Create Civitas-type inter-city projects ?

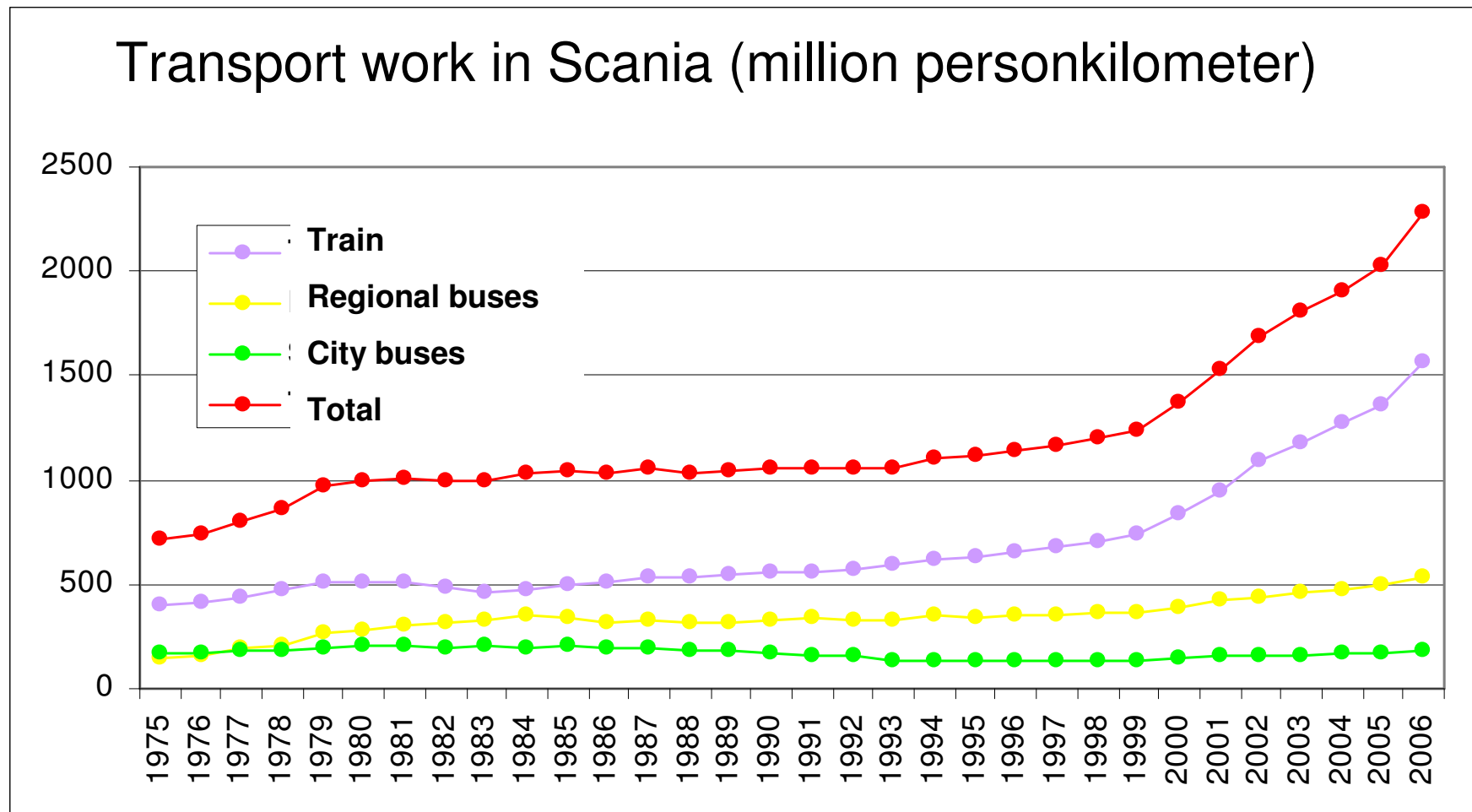


Environment more and more important

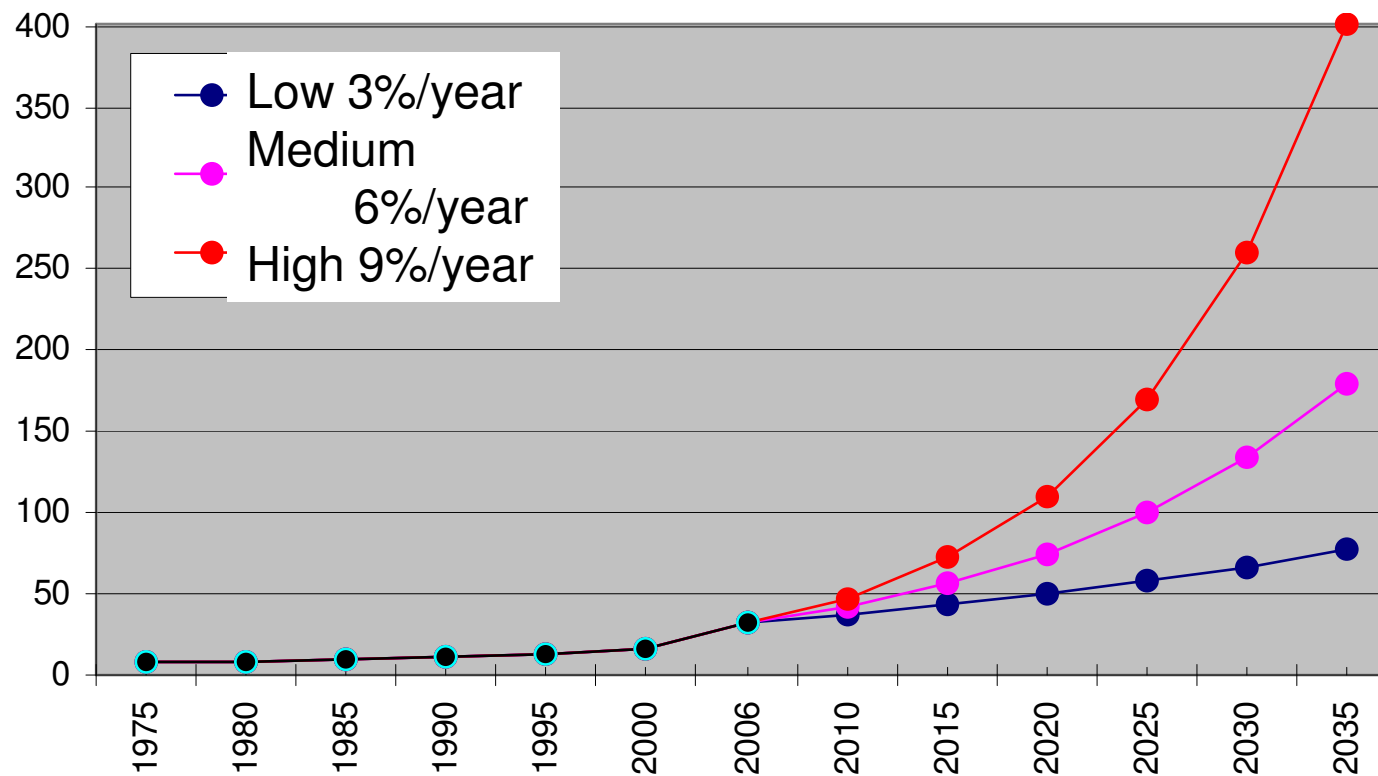
Public
Transport of
Skånetrafiken

	1999	2000	2001	2002	2003	2004	2005	2006
Discharge per personkm								
CO2 gram per personkm	45	42	38	35	33	33	28	27
NOx gram per personkm	0,43	0,39	0,33	0,3	0,27	0,24	0,2	0,19

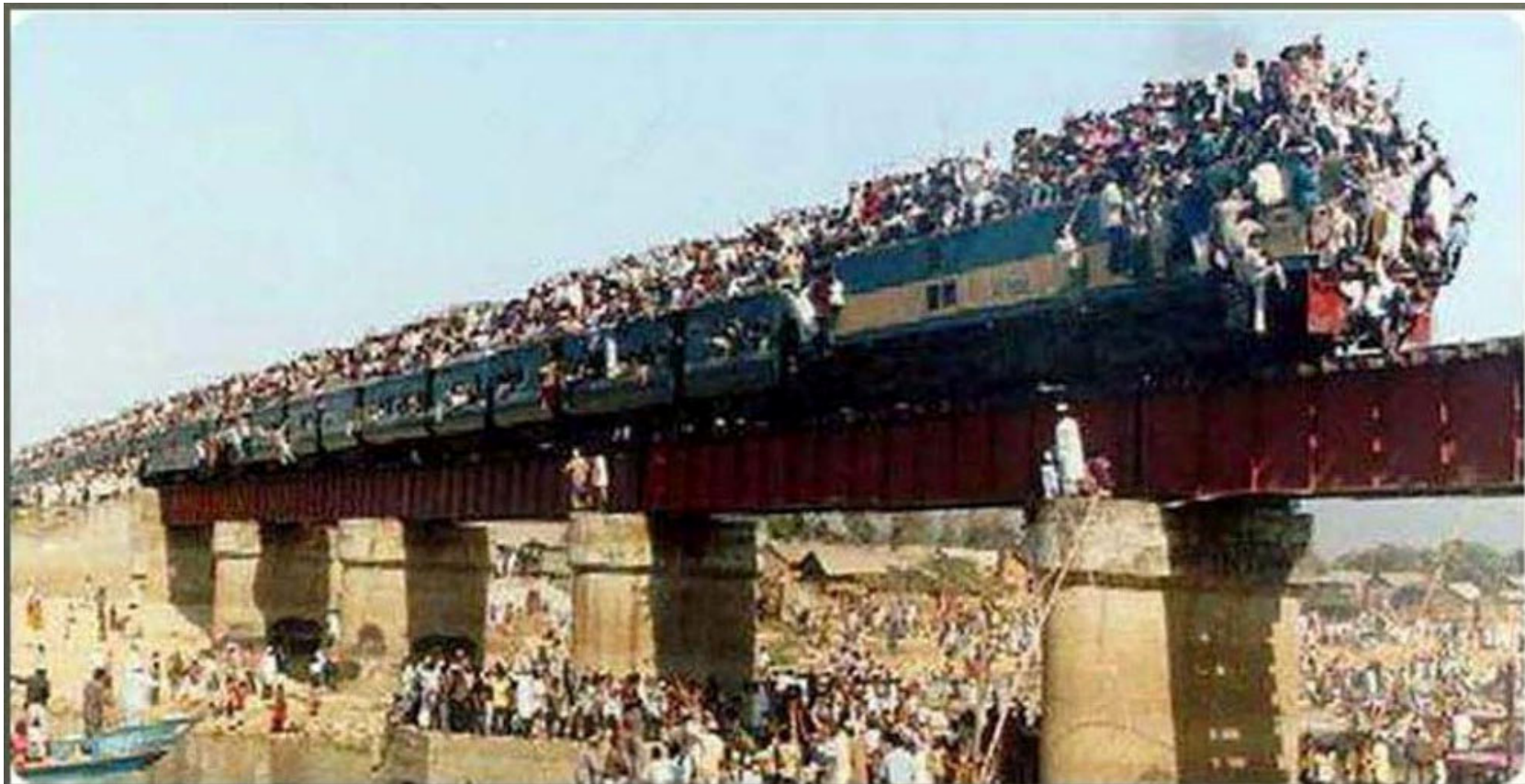
People travel more and make longer journeys (multi-modal seamless travelling)



Million train-journeys/year in Scania 1975-2006 with estimates to year 2035



The future ?



Realtime information, bus priority system, multi-modal travel planning increases passenger usage of Public Transport

Thank you

Krister Nordland

contact

Krister.nordland@skanetrafiken.se

www.civitas-initiative.eu



THE CIVITAS INITIATIVE
IS CO-FINANCED BY THE
EUROPEAN UNION