

# Public transport for sustainable urban areas

Johan Holmgren

[Johan.holmgren@himolde.no](mailto:Johan.holmgren@himolde.no)



# My Background

Professor of Transport Economics, Molde

Visiting Professor, Malmö University

Previously Associate professor in Economics and City Logistics  
(Linköping University)

## *Research areas*

- Public transport (Demand analysis, Pricing strategies, Cost structures)
- Investments in infrastructure
- City logistics
- Efficiency analysis



**Molde University College**  
Specialized University in Logistics



# Urban public transport



# Low- and high density urban areas



# Why **Urban** Public Transport

Urbanization is high and the process is ongoing

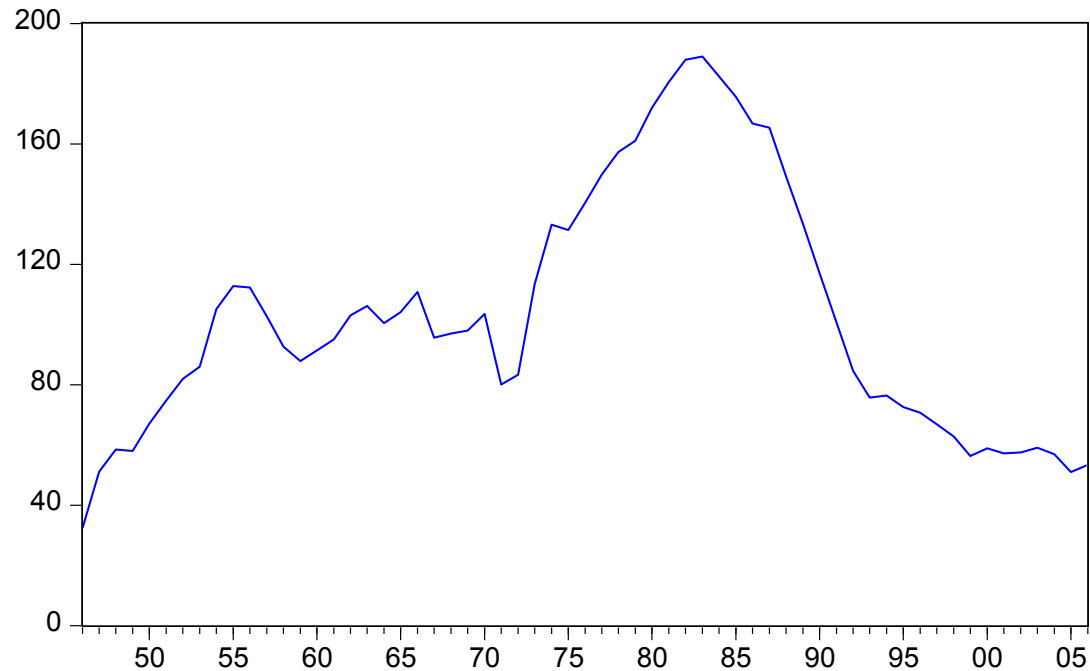
Potential for efficient public transport is higher in urban areas

Public transport plays a small role outside urban areas



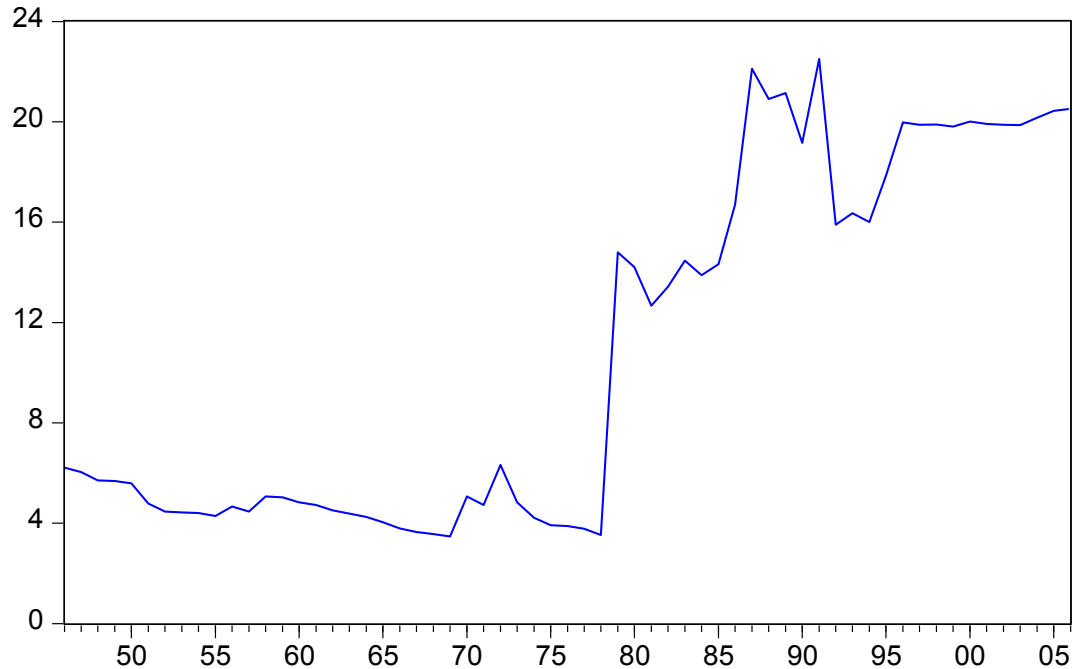
# The starting point

Bussresor per person och år i Linköping 1946-2006

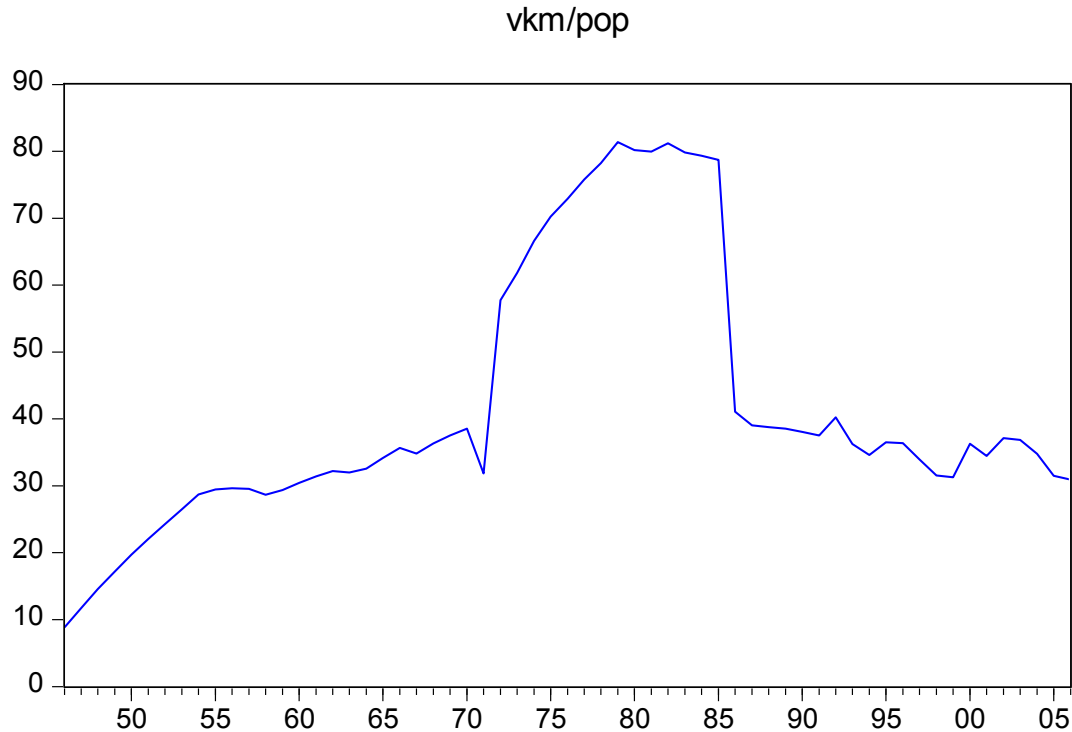


# Public transport Prices Linköping

Real fare (2006 prices)



# Traffic supply Linköping





# Other factors



# Trips per person

County	% Change 2008-18
Stockholm	4.5
Uppsala	37.0
Södermanland	51.4
Östergötland	5.4
Jönköping	20.8
Kronoberg	53.8
Kalmar	48.4
Gotland	-25.6
Blekinge	15.4
Halland	44.6
Värmland	-0.8
Örebro	0.3
Västmanland	54.9
Dalarna	-26.0
Gävleborg	14.2
Västernorrland	13.8
Jämtland	19.3
Västerbotten	58.7
Norrbotten	12.2



# Trips per person

County	% Change 2008-18	% Change 1986-2018
Stockholm	4.5	12.1
Uppsala	37.0	-21.6
Södermanland	51.4	-10.2
Östergötland	5.4	-49.2
Jönköping	20.8	-11.2
Kronoberg	53.8	35.6
Kalmar	48.4	-13.8
Gotland	-25.6	-31.8
Blekinge	15.4	30.8
Halland	44.6	45.9
Värmland	-0.8	-3.0
Örebro	0.3	-27.9
Västmanland	54.9	-0.3
Dalarna	-26.0	-32.6
Gävleborg	14.2	-3.4
Västernorrland	13.8	-24.1
Jämtland	19.3	-61.8
Västerbotten	58.7	13.8
Norrbottn	12.2	-1.3



County	%Change VKM	% Change Price	% Change Costs per VKM
Stockholm	-17.8	239.1	95.2
Uppsala	38.3	84.2	117.4
Södermanlands	48.2	45.3	55.8
Östergötlands	11.4	173.1	43.4
Jönköpings	76.9	260.2	58.5
Kronobergs	80.5	151.5	74.9
Kalmar	31.3	347.3	83.8
Gotlands	31.0	-1.0	84.6
Blekinge	78.3	161.5	38.5
Hallands	199.0	286.6	51.9
Värmlands	66.7	128.1	70.3
Örebro	54.1	78.3	47.4
Västmanlands	51.4	72.7	51.5
Dalarnas	37.3	30.9	35.0
Gävleborgs	54.6	84.7	4.8
Västernorrlands	-8.9	196.8	47.9
Jämtlands	-0.5	354.4	22.0
Västerbottens	2.8	16.2	54.6
Norrbottnens	14.1	71.6	36.4



# Modal split in some urban areas\*

	Molde	Linköping	Malmö	Oslo	Copenhagen	Stockholm
Walking	10	15	14	29	6	14
Cycling	4	39	26	5	41	7
Car	83.5	40	35	29	26	32
Public Transport	2.5	6	25	37	27	47

\*Note that observations are for different years, Molde and Linköping are specifically for trips to work



# What to do to strengthen public transport

Low (zero) price when capacity utilization is low

Higher prices during peak periods

Higher frequency

Better coverage



# Restrictions on car use



# Efficient networks

Ridership or coverage?  
- Potential goal conflict

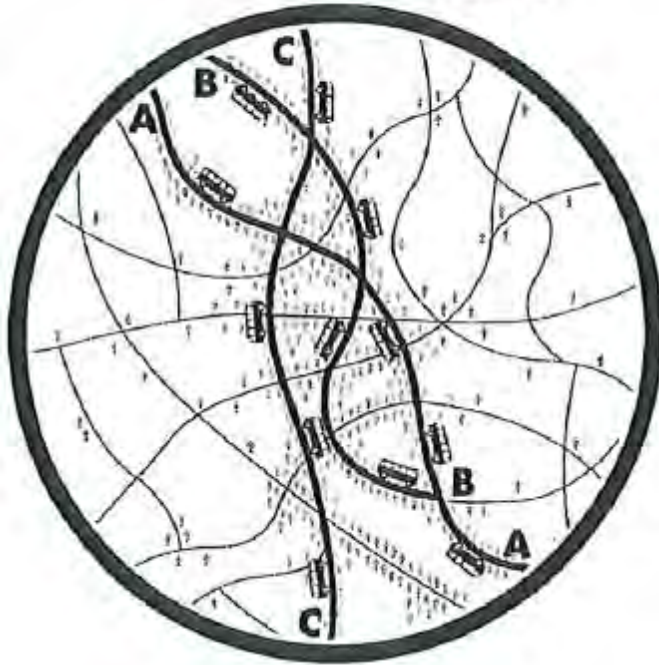


Source: Walker (2012) Human transit



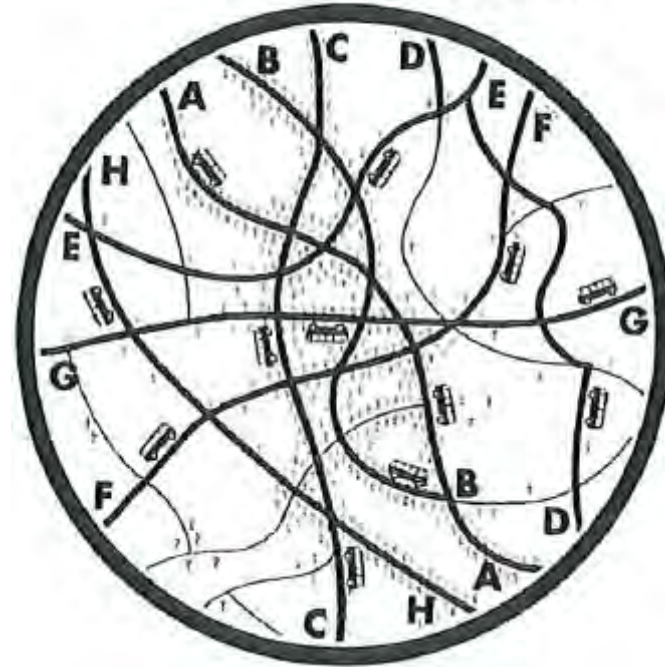


## RIDERSHIP GOAL



Three lines with 4 buses

## COVERAGE GOAL



8 lines with 1-2 buses



# Is the Mode of transport important?

Tram and light rail is often promoted

However: The comparison is usually not fair



## How We Treat Train Passengers



## How We Treat Bus Passengers



(Hoffman, 2003)



# Is the Mode of transport important?

Tram and light rail is often promoted

However: The comparison is usually not fair

Investments in facilities differ

Bus and tram usually serve different types of areas



Aston et.al. (2016): **No difference in TOD effects from using different modes of transport!**



# Frequency beats mode

High frequency services more important than the mode

“Frequency is freedom” (Walker, 2012)





[Johan.holmgren@himolde.no](mailto:Johan.holmgren@himolde.no)