

**Data problem  
when working  
with cycle CBA-  
What did we do  
under this  
situation?**



**TRAFIKVERKET**

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# Major benefits considered in Cycle CBA (GC-kalk)

- Value of Travel Time
- Trafik Accidente (safety)
- Health benefits
- Sickness absence
- External cost of road transport
  - Noise
  - Emmissions to air
  - Road wear
  - Accidents between cars
  - CO2 - volume

# The basis for calculating benefits for the 1- Current (existing) and 2 – new/induced cycle Journeys (Future)

## Existing and new cycle journeys

1. Number of cycle journeys (cycle  $\dot{A}DT$  = average daily flow)
2. Distance traveled (distance traveled)
3. Number of days per period

Number of cycle journeys times the length of journey = total distance cycled (cycle TA)

Is cycle ADT available?

Number of journeys? (jobb- hem – jobb)

# Number of cycle journeys (cycle ADT) usually lacking. What did we do when the cycle ADT missing?

- Current (Existing) cycle journeys
  - Cycle count for longer period, first best alt
  - Alternatively (second- best) make cycle counting for one month
  - Then calculate according the percentage share to get average daily journeys (ADT cycle).
- The percentage share
- Schabloner

# Percentage Monthly Share

Month	Share	Weekdays	Weekends
jan	3,30%	3,40%	2,50%
feb	3,30%	3,40%	2,60%
mar	5,30%	5,50%	4,80%
apr	8,90%	8,80%	9,70%
maj	13,50%	13,30%	14,10%
jun	12,90%	13,30%	12,60%
jul	9,80%	9,10%	13,00%
aug	12,70%	12,30%	13,50%
sep	11,40%	11,60%	10,60%
okt	9,00%	9,00%	8,30%
nov	6,80%	7,00%	5,80%
dec	3,20%	3,50%	2,70%

## Computing cykel ADT (average daily flow)

- Percentage share
  - June : 12,9 %
  - June :count= 1000 (average daily cycle journeys for the month of june)
  - ÅDT (average daily cycle journeys for the whole year=  $1000 / (12,9\% / 100) / 12 = 646$ )

# Numbers/schablons

- New Numbers/ schablons for cycle journeys (ADT) - polygon schablons - are based on population size and distance from the center.

	QC Distance center		
Population size	0-2 km	2-4 km	4-6 km
10000- 30000	250	175	75
30000-60000	500	350	150
60000-90000	800	560	240
90000-120000	1000	700	300

# New cycle journeys generated as a result of intervention- Forecasting (future journeys)

The types of intervention considered in our tool (GC-kalk):

- ❖ Mixed traffic

**Separate the cyclists from motor vehicle**

- ❖ Cycle path not in connection with the road

- ❖ Cycle path next to the road

- ❖ Cycle lane on the road way

The question is how many- new cycle journeys - generated due to the intervention?



# How many new cycle journeys generated due to infrastructure investments or other cycle promotion ?? - Forecast / Prediction

- Historical data (the best way)
  - Forecast / prediction of the total cycle journeys in Sweden
  - The best is time-series-cross section (panel data), but difficult and the next best is cross-sectional data covering large geographical areas.
  - Forecast on a specific cycle route with advanced Model - (but lacking eg, bicycle paths with properties, bicycle ADT, inventory of cycle ways, modeling of route choice, mode choice, etc.)

## New cycle journeys - Forecast (what did we do?)

Vti – 2013 :( 7,6 %, 15%, 16,4% och 20%)

Wardman Transportation Research -2007  
:(19%, 21%, 33%, 46%, 50% och 55 %)

Elvik 1998: (26 %)

Saelinesminde, 2002 och 2004: (20%)

Recommendation = 20%. When statistics or specific knowledge is missing.

PASTA ??

# Annual growth of cycle Traffic

Another area of interest in CBA of cycle is-Annual growth of Cycle Traffic (=Journeys\*distance). This one is not crucial like number of journeys (ADT) and distance travelled. However there is uncertainty when applying annual growth in cycle CBA (we apply it in GC-kalk).

- ❖ Population growth - indicator of annual growth of cycle traffic?

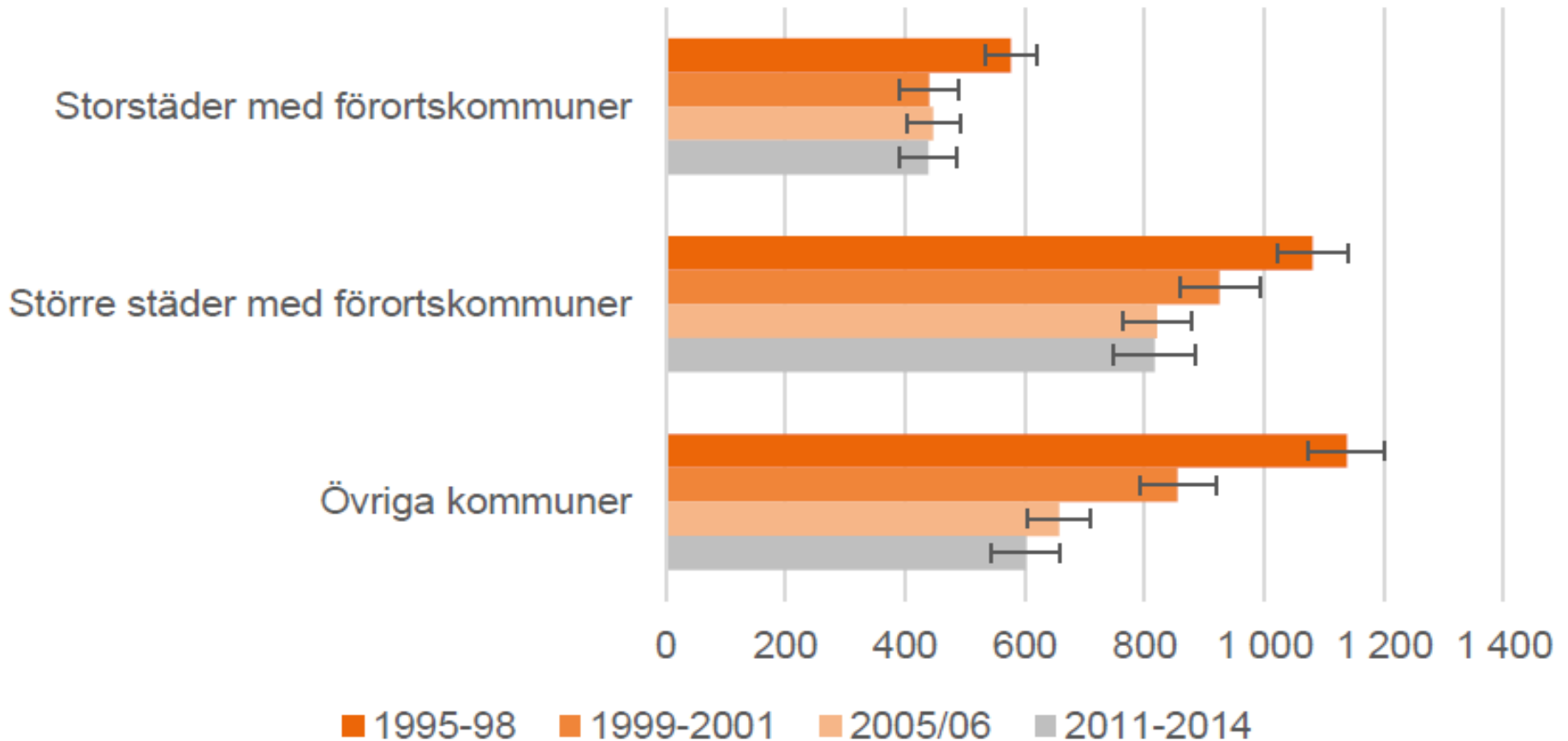
# Historical development of Cycle Journeys and population growth

NTS ( Cycle journeys + population growth)

- Historically the number of cycle journeys has declined between 1995- 2014
- It decline from 2.8 million (1995) to 1.9 million Journeys per day (2014)= declined by 34 %.
- This reduction occurred despite population (6-84 years) has increased by 6% from 1996 to 2012 last December

The growth of cycle journeys can not be derived from population growth.

# Number of thousand partial journeys per day where cycle has been used as a means of travel (NTS)-



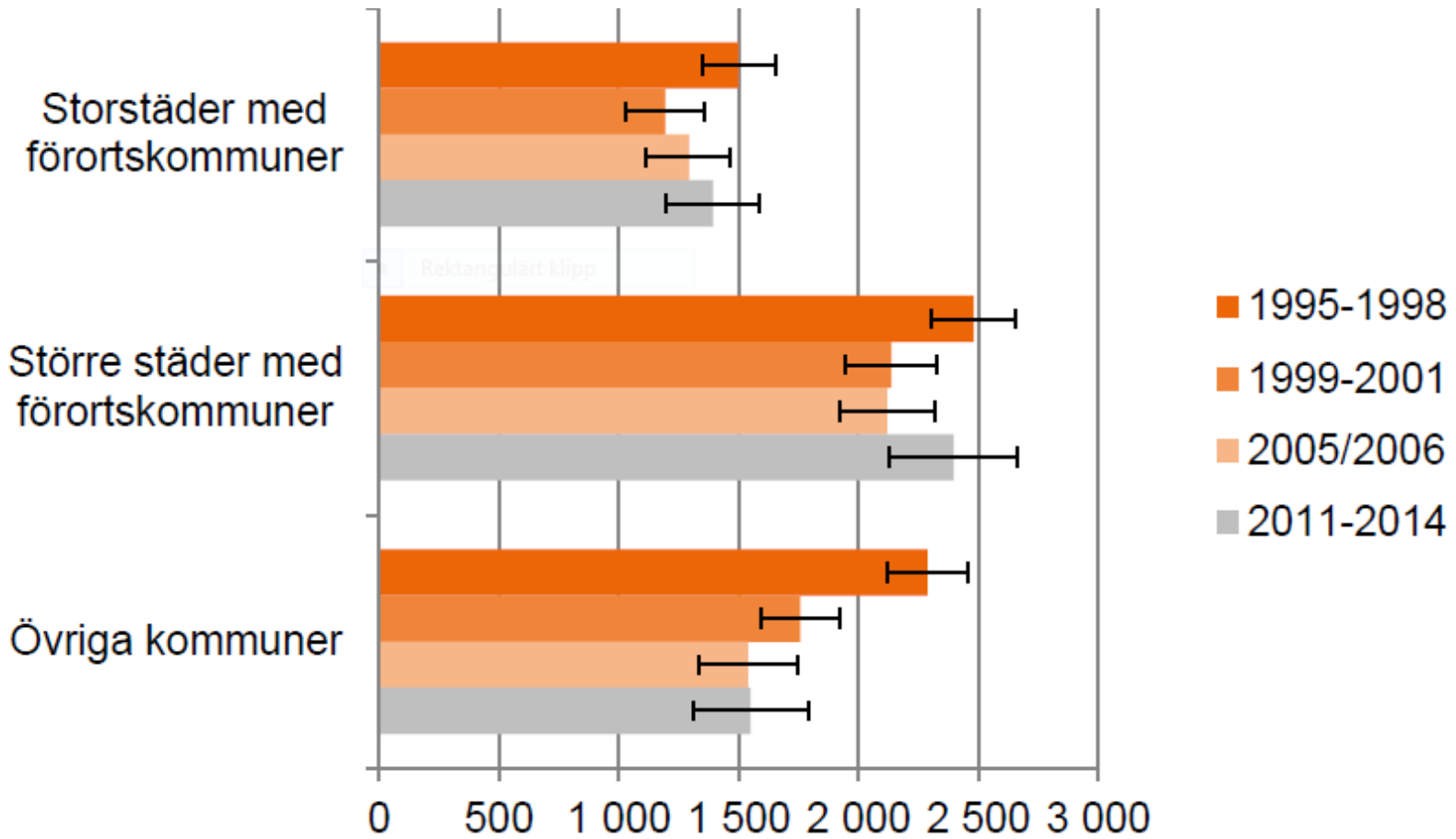
# Historical development of cycle journeys and Economic Growth (GDP)

- Since the 1970 GDP has increased slightly over 2% per year
- GDP growth and the number of cycle journeys have gone in opposite directions.
- Cycle journeys decreased while car journeys increased. - Inferior good / negative income elasticity
- To derive the number of journeys from GDP growth will be negative-falling demand for cycle journeys.

# Cycle Traffic growth according to the 2011- 2014 NTS

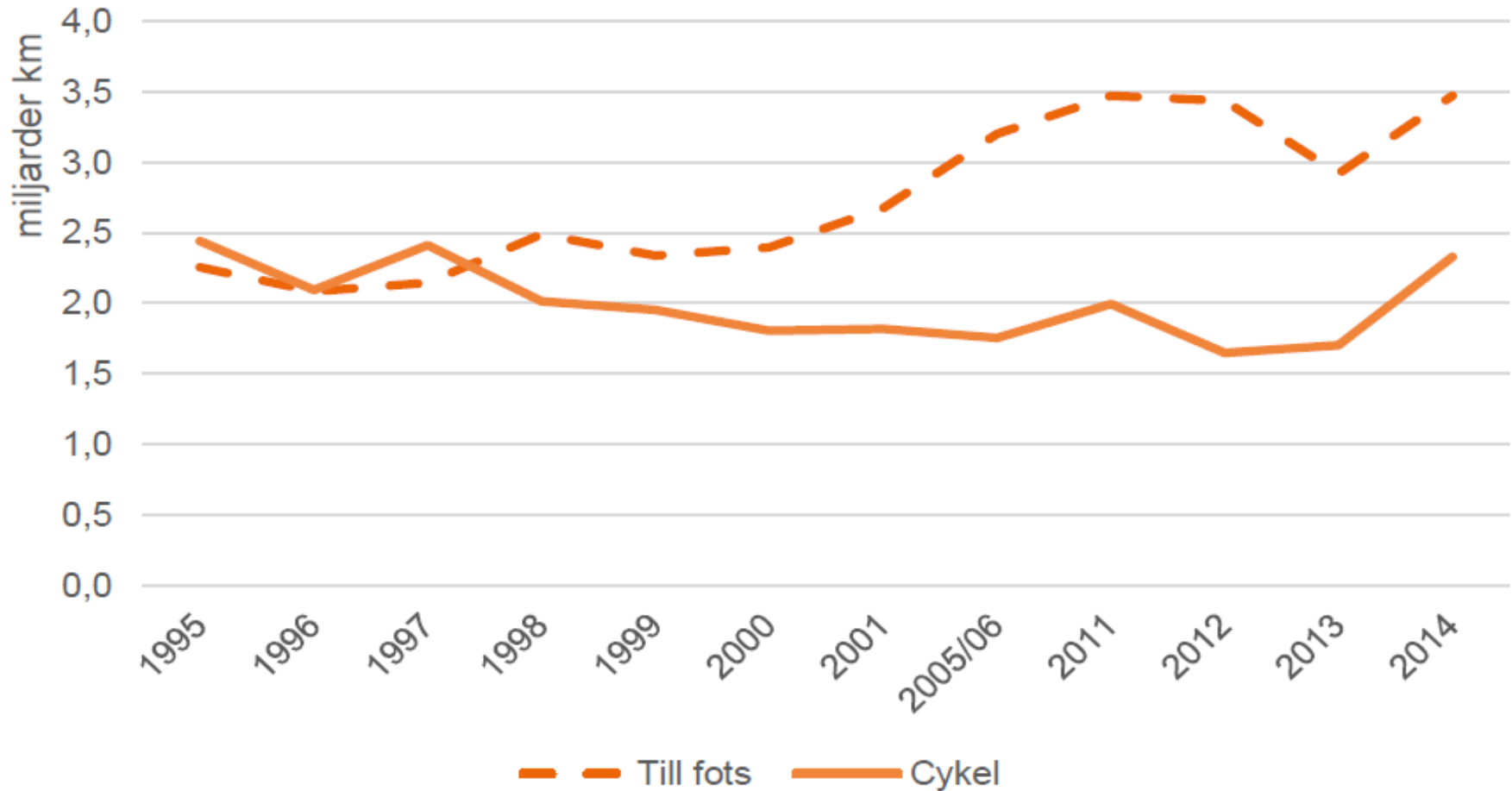
- The average trip length by bicycle has increased by 31 per cent in the most recent surveys (2011-2014)
- Total distance traveled by cycle therefore increased= Number of Journeys\* Distance traveled
- Reason for increment – We don't know

# Total distance traveled by cycle (1 000 kilometers) per day, in different cities and municipalities – according to population size (NTS)





# Total length of journey on foot and by bicycle for different years - NTS (RVU)





KORSNING

C D E F G H I J K L M N O

# FIKVERKET

it

20%  
 %-satsen för  
 att beräkna  
 antal  
 nygenererade  
 cykelresor

## NULÄGE (JA)

Typ av väg	Vägens hastighetgr Km/h	Antal cykelresor JA	Antal motorfordon	Reslängd JA Km	Cyklistens Hastighet
		500			
LÄNK	50	250	700	5,00	15
KORSNING	50	250	700		
KORSNING					

Beräkning antal CS/FS och MF

**Antal cyklar / gångtrafikanter**

Ådt1=

Ådt2=

Ådt3=

Ådt4=

**Antal motorfordon**

Ådt1=

Ådt2=

Ådt3=

Ådt4=

Antal cykelresor (beräkning)	Reslängd UA Km	Cyklistens Hastighet
50,0		
50	5,00	

