

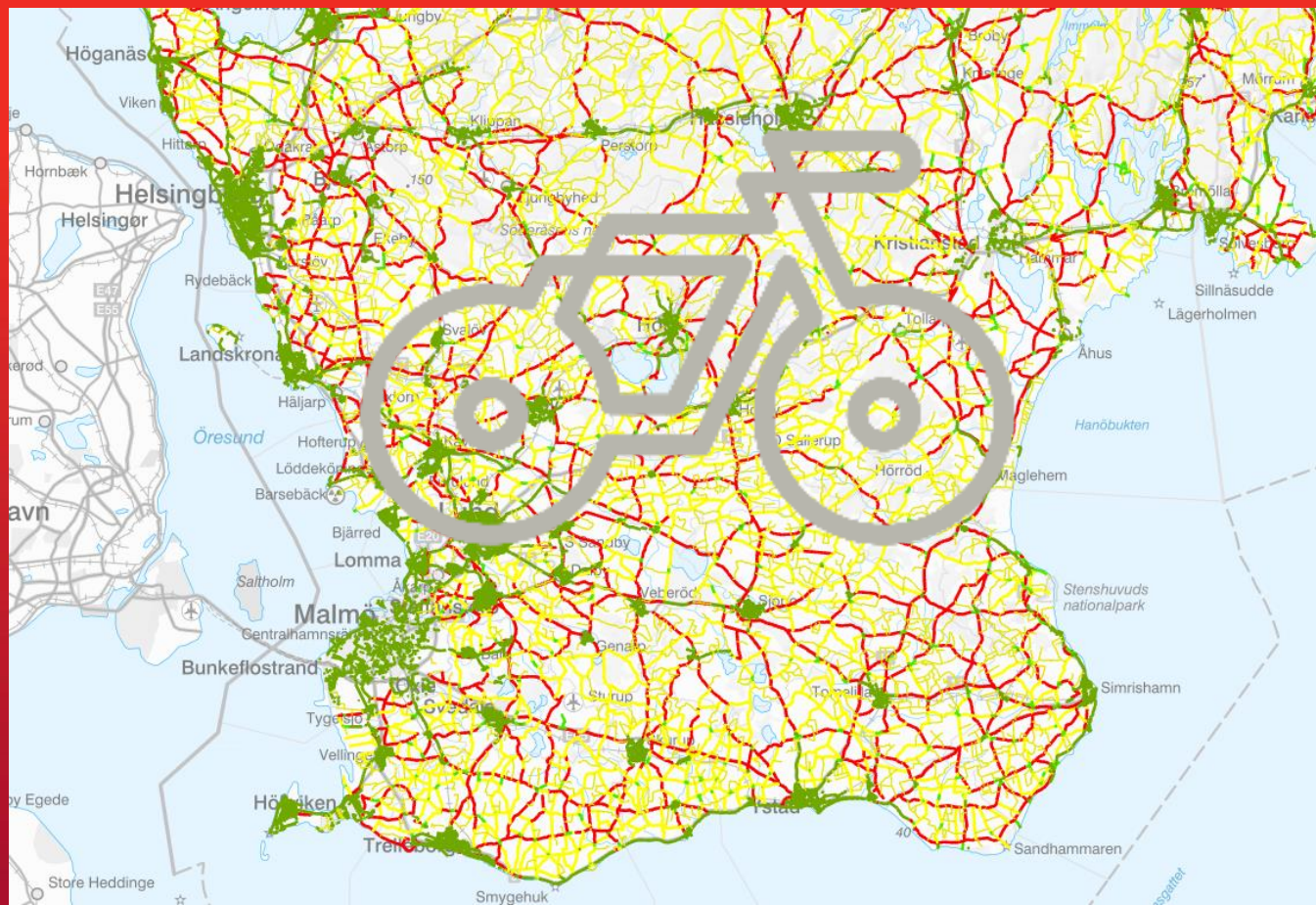
VISION
ZERO
ACADEMY
STRIVING
FOR EXCELLENCE IN
TRANSPORT
SAFETY



Network Wide
Road Assessment

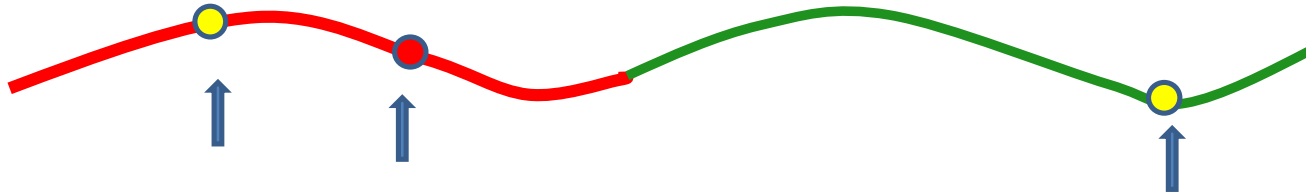
Safe cycling

Lars Ekman



Network Wide Road Assessment in Sweden

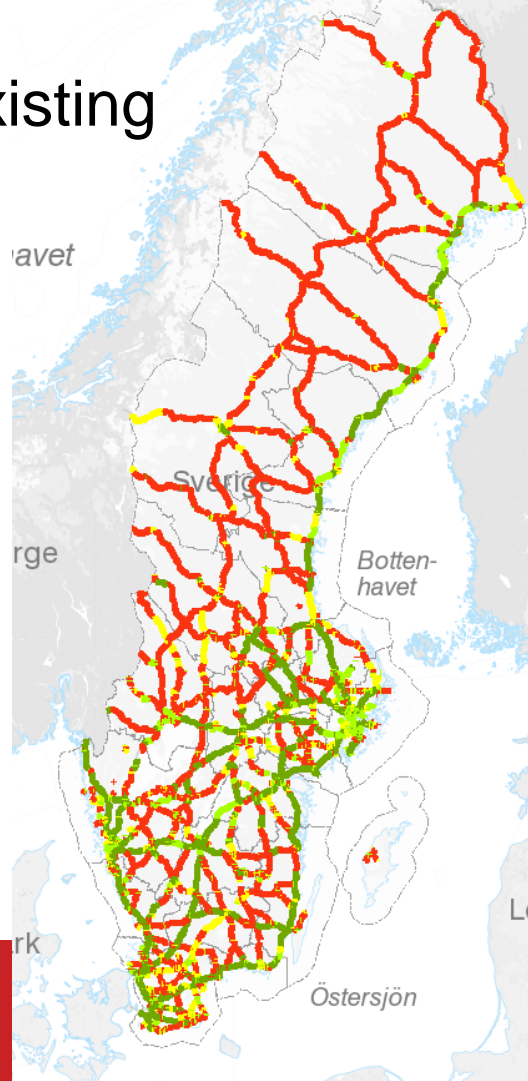
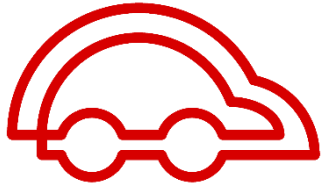
- A set of simple models
 - Car links
 - Car intersections
 - Pedestrians and bicyclists on links
 - Pedestrians and bicyclists crossing roads



Background

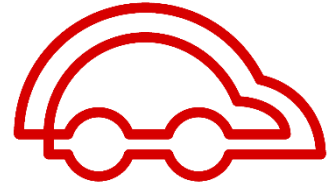
- Infrastructure is one vital pillar for the Swedish traffic safety work
- Implementation of the first EU directive
- Implementation of the second EU directive

Improvement on existing roads



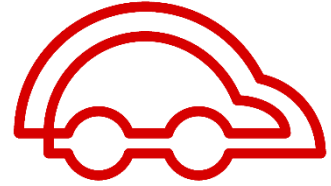
Car links

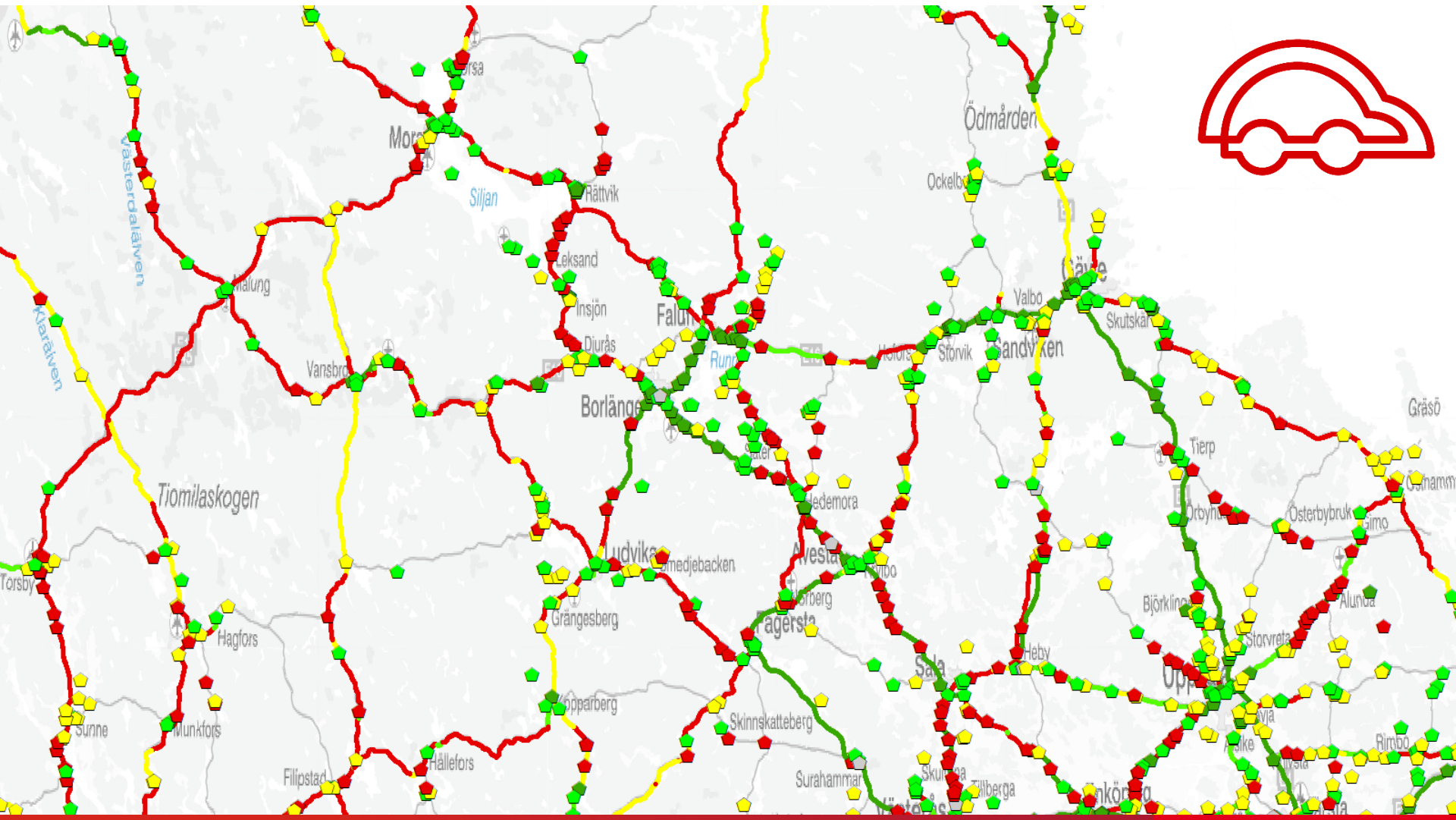
- Speed
- Mid-barrier
- Side area



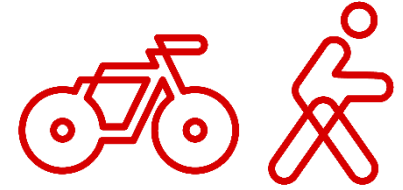
Car Intersections

- Speed
- Intersection type
- Speed reducing countermeasures

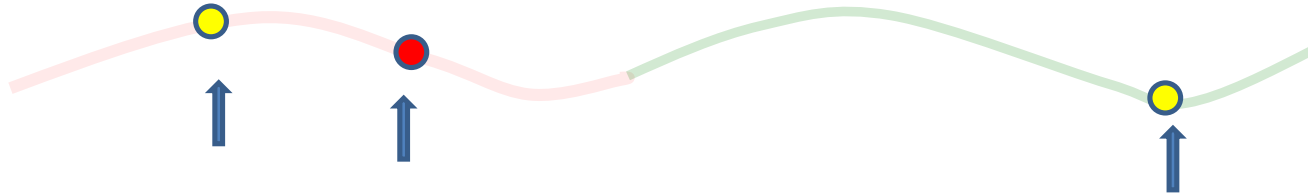


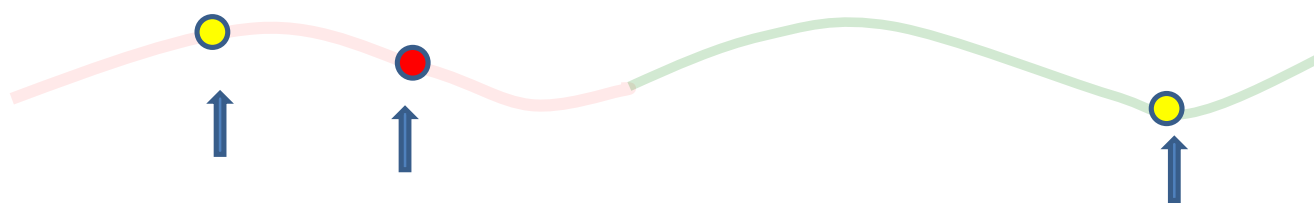


Pedestrian and bicycle - Crossing



- Separation
- Speed





Pedestrian and bicycle crossings

Type

1. Tunnel

2. Bridge

3. Level crossings

Type 1 and 2 .

Type 3 where 85-percentile is below

30 km/h.

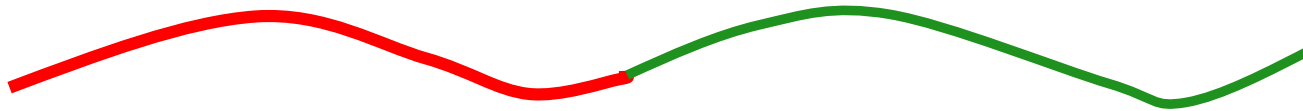
Type 3 where 85-percentile is below

40 km/h.

Pedestrian and bicycle - Links



- Separation
- Speed
- Space allocated for pedestrians and bicyclists
- Car volume



Bicycle network

	30	40	50	60	70	80	90	100	110
Bicycle lane	Green	Green	Green	Yellow	Yellow	Yellow	Red	Red	Red
Separated	Green	Green	Green	Green	Green	Green	Green	Green	Green

Private roads with public maintenance support








< 9 m	under 501	Yellow
-------	-----------	--------

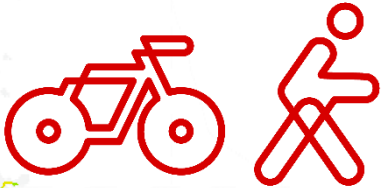
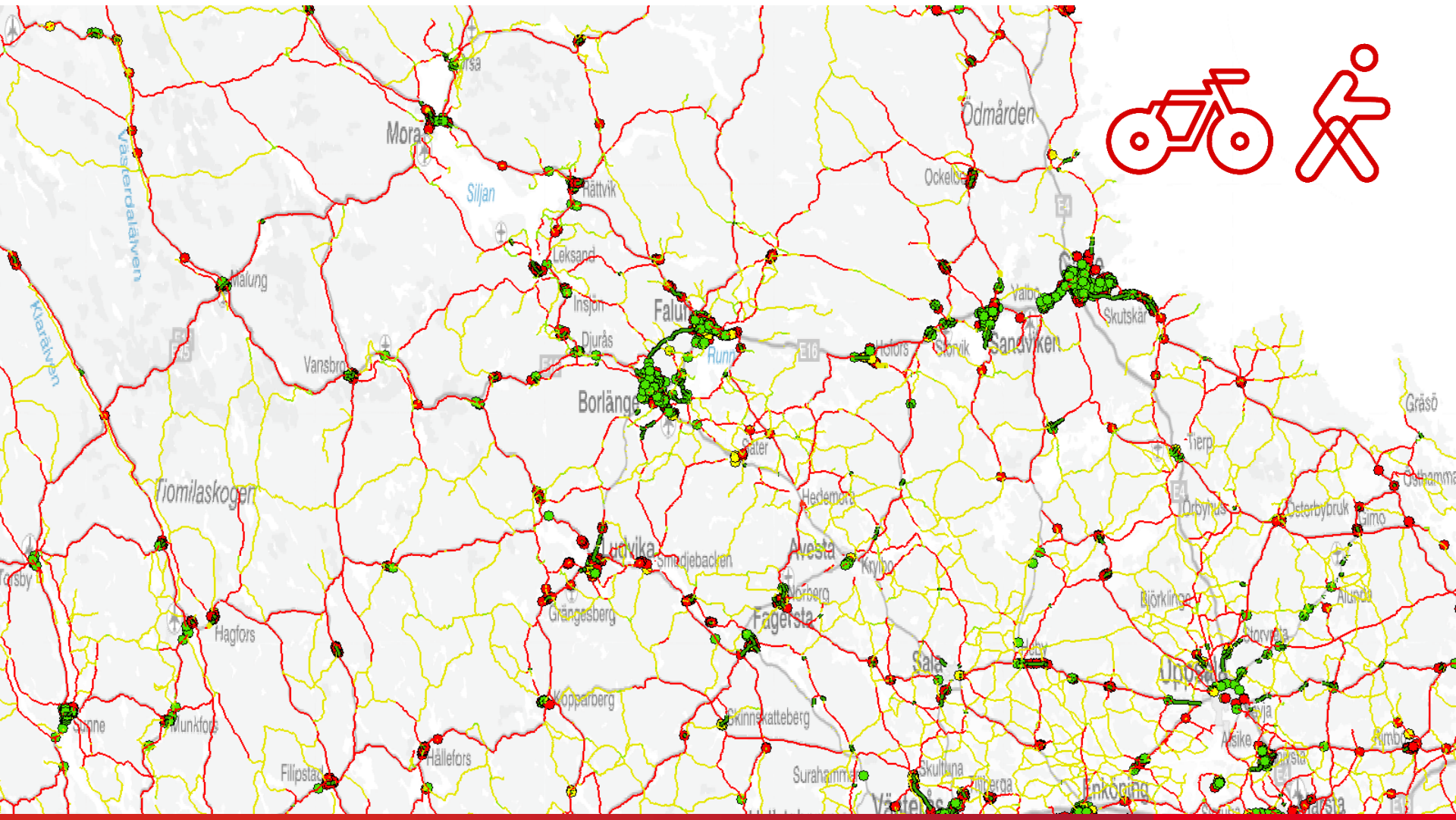
Car network

	Road width	AADT	30	40	50	60	70	80	90	100	110
3	> 11,5	under 501	Green	Green	Green	Green	Yellow	Yellow	Red	Red	Red
		501-1500	Green	Green	Green	Green	Yellow	Yellow	Red	Red	Red
		above 1500	Green	Green	Green	Yellow	Yellow	Red	Red	Red	Red
2	9-11,5 m	under 501	Green	Green	Green	Yellow	Yellow	Red	Red	Red	Red
		501-1500	Green	Green	Green	Yellow	Yellow	Red	Red	Red	Red
		above 1500	Green	Green	Yellow	Yellow	Red	Red	Red	Red	Red
1	< 9 m	under 501	Green	Green	Green	Yellow	Yellow	Red	Red	Red	Red
		501-1500	Green	Green	Yellow	Yellow	Red	Red	Red	Red	Red
		above 1500	Green	Yellow	Red	Red	Red	Red	Red	Red	Red

Bilnät		ÅDT	30	40	50	60	70	80	90	100	110	
Vägbredd												
	Cykelfält											0
3	> 11,5	under 501										0
		501-1500							1			1
		över 1500							2	1		3
2	9-11,5 m	under 501										0
		501-1500					1					1
		över 1500			1			1	3			5
1	< 9 m	under 501					6	2		1		9
		501-1500			1	1	3	1	2	1		9
		över 1500			1	2	8	6	5	1		23
			0	0	3	3	18	10	13	4		51

Validation

	TS-class	Number of relevant fatalities 2010-2019	Per length	Per injured in single crash	Number of single crashes
	Gröna	0	0,00	0,000	173
	Gula	10	 0,21	 0,025	405
	Röda	41	 1,08	 0,100	409



The Swedish approach

- Pros
 - Easy to communicate
 - Easy to cover a big network
 - Easy to update
 - Consensus about the affecting factors
- Cons
 - Not all road users are incorporated (MC heavy Vehicles)
 - Rather Swedish
 - Single bicycle injuries are not considered



Examples

© 2021 Google

Separated

100
km/h

Green at crossing
(Tunnel)
Red on the link
(100 km/h, high car flow)



Rött På sträckan
(90 km/tim, mycket trafik)



Grönt på sträckan (separat
GCM-bana)

Rött för passagen (70
km/tim, mycket trafik)

Separ
ated

70
km/h



70
km/h
narrow
above 1
500



70
km/h
Narrow
under
500



40
km/h
narrow
above
1500



Separated



70
km/h
narrow
501-
1500



40
km/tim
narrow
Under
1500

The model is used

- In planning
- Action plan
- In-depth-investigations
- NGO

Dr Lars Ekman
Lars.Ekman@trafikverket.se



VISION ZERO
TOGETHER WE
SAVE LIVES

Thanks

