



**Royal
HaskoningDHV**
Enhancing Society Together

Overview Road Safety in the Netherlands

And also Turbo Roudabouts

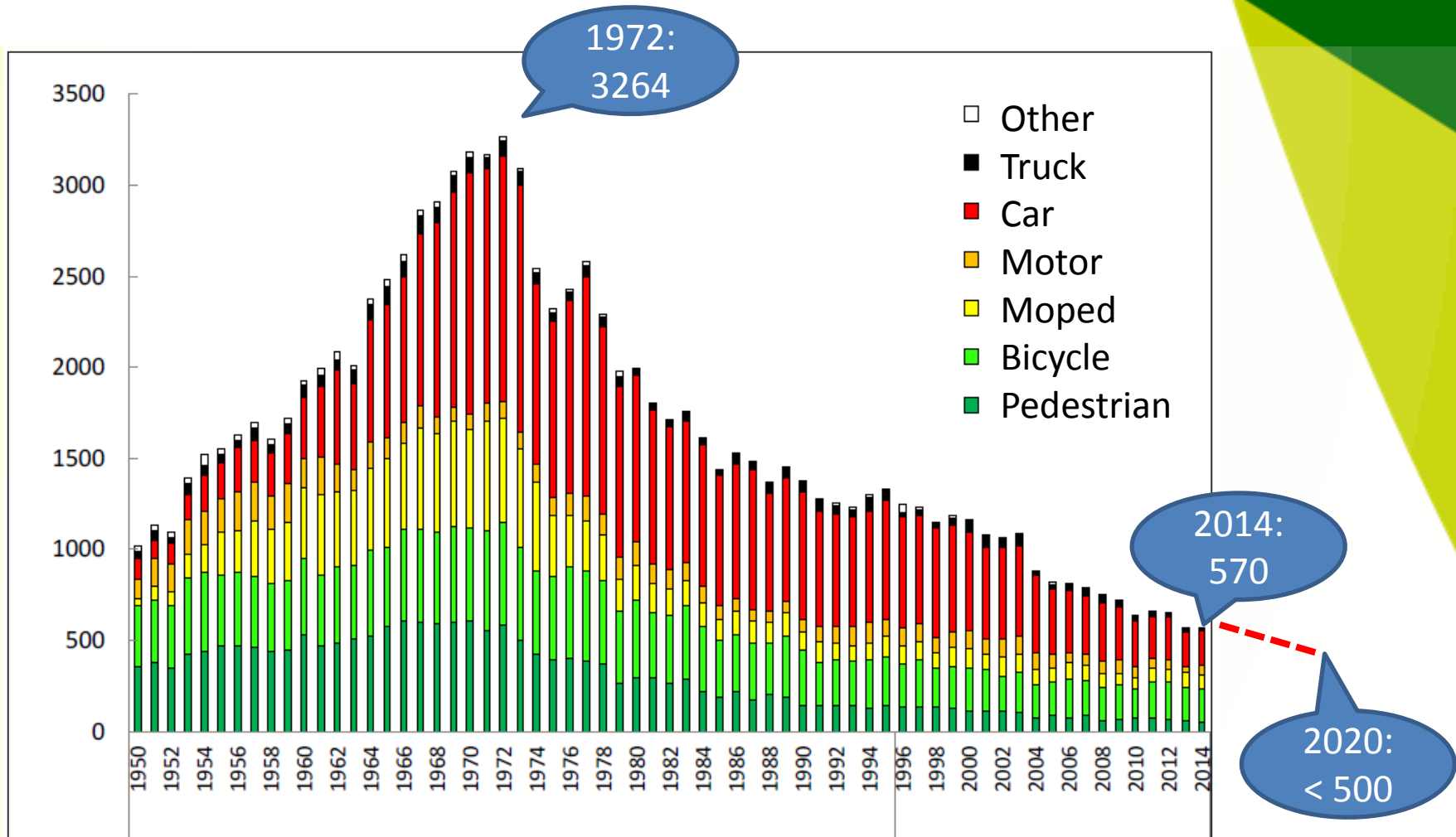
Dirk de Baan
5 April 2016

1. Road Safety in The Netherlands

Road Safety in The Netherlands



Fatal accidents in The Netherlands



www.SWOV.nl

More than 200 measures since 1950:



19



1979



2005



1974



1971



1

2005

Ook als je op visite gaat

2002

Daar kun je mee **THUIS** komen



1972



2008



1



1998

1998

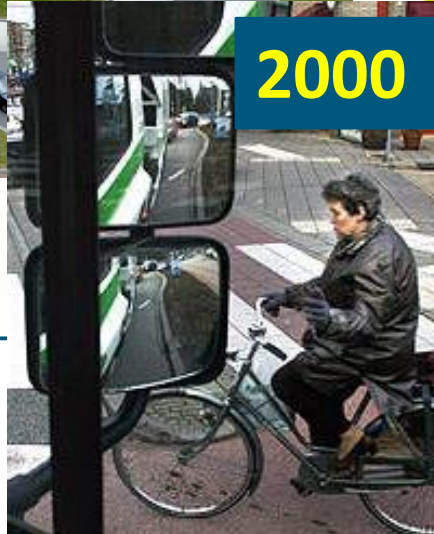
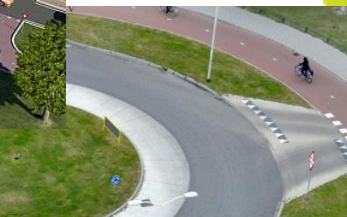
1987



	Stroomweg	Gebieds-ontsluitingsweg	Erftoegangsweg
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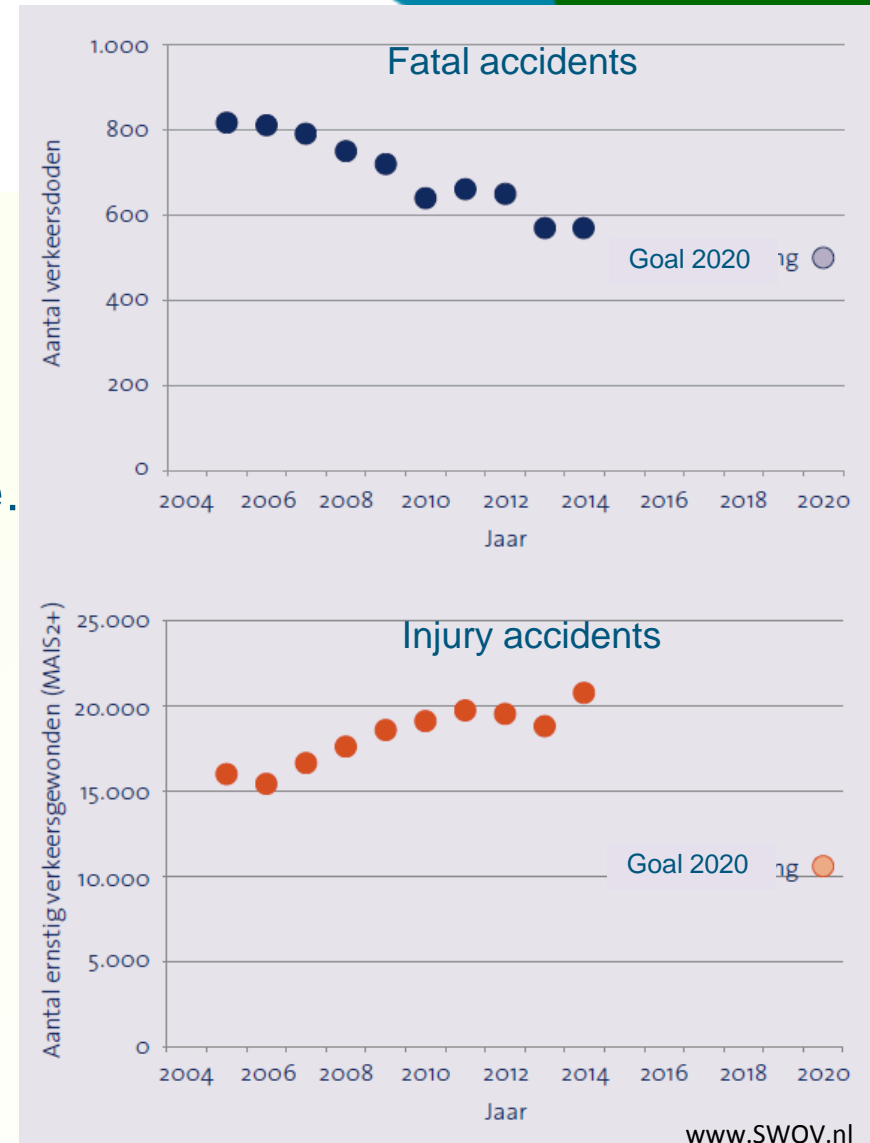
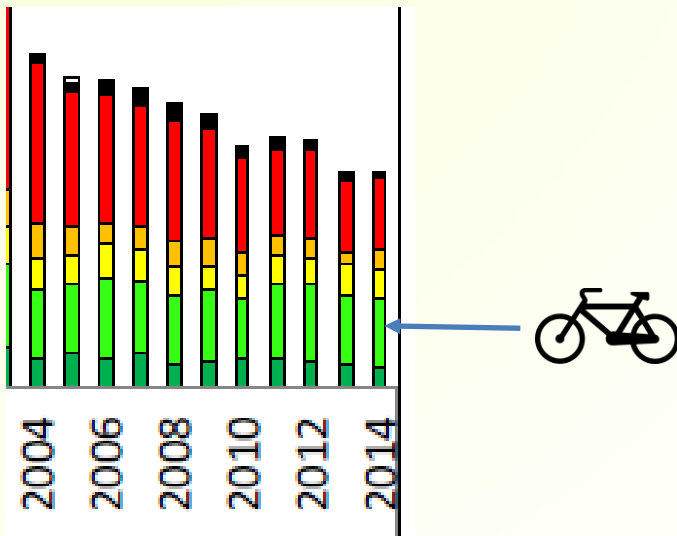
traffic system



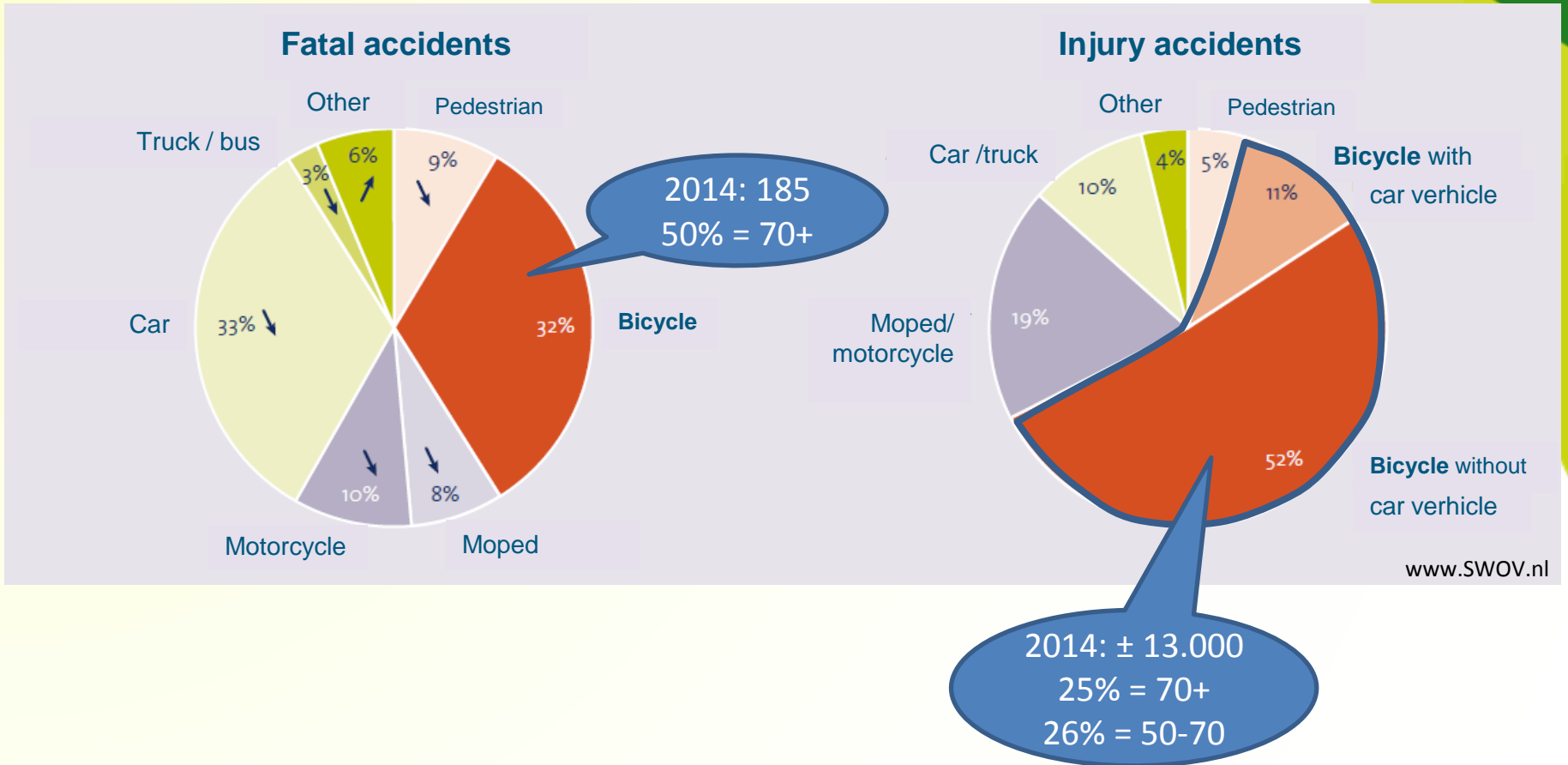
2000

Fatal & injury accidents

- Fatal accidents:
We will reach the 2020 goal
- Injury accidents:
Reaching the 2020 goal is a challenge.

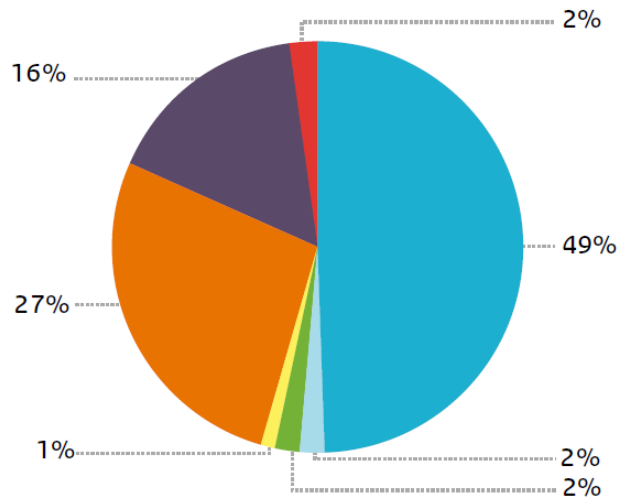


Cyclists are vulnerable...

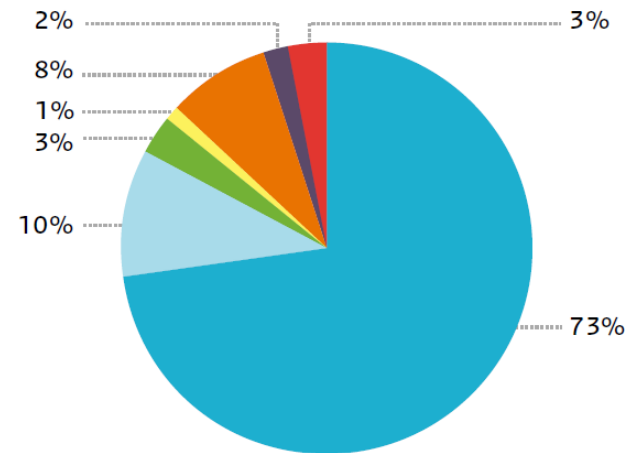


Cyclists are vulnerable...

Trips



Mileage (kilometres)



Cyclists are vulnerable...
Fatal accidents: 32%
Injury accidents: 63%

www.kimnet.nl

2. Turbo Roundabouts



What is a turbo roundabout?

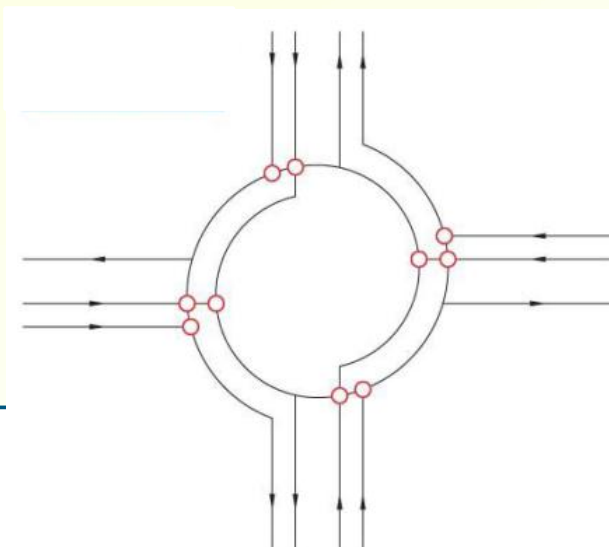
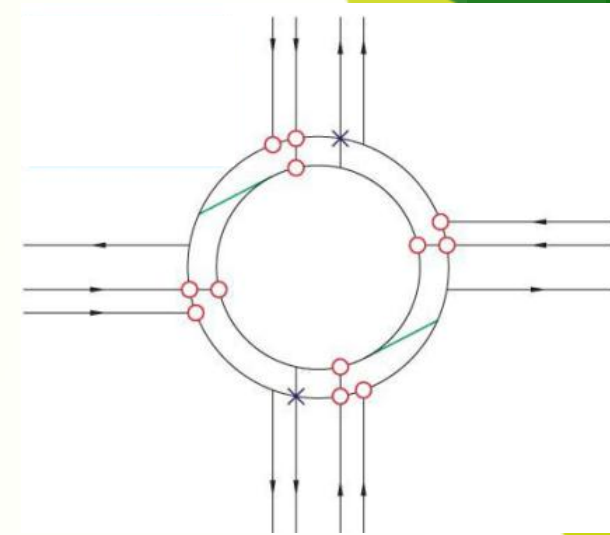
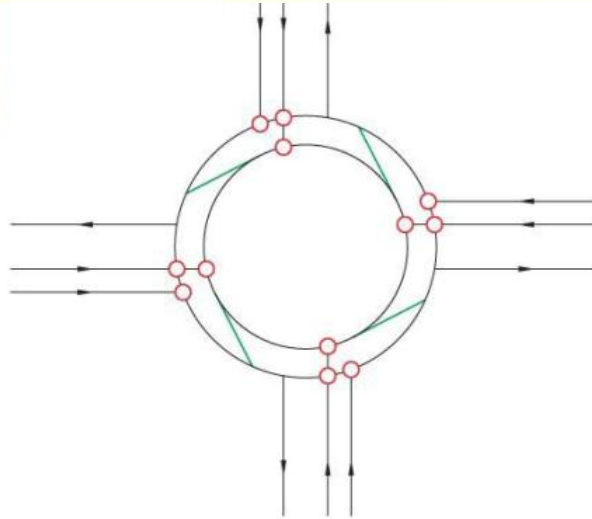
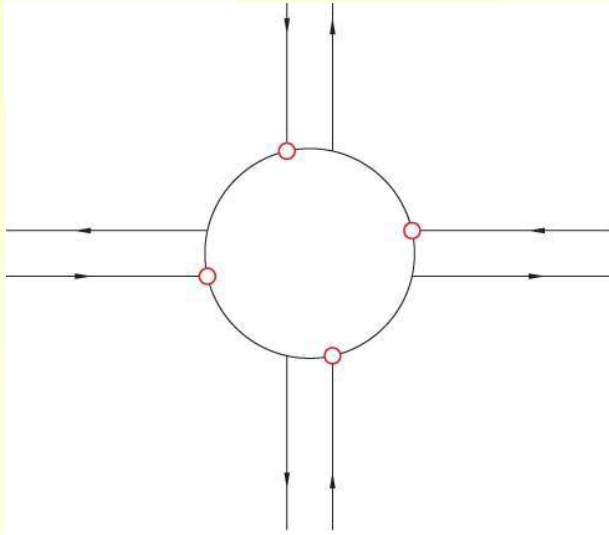
A turbo roundabout is:

- A multi lane roundabout with:
 - **less conflicts**
 - **higher capacity**
 - **more safety**



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With less conflicts



	Conflicts	Weaving	Cutting
Single lane	4	0	0
Multi lane (1)	12	4	2
Multi lane (2)	12	0	2
Turbo roundabout	10	0	0

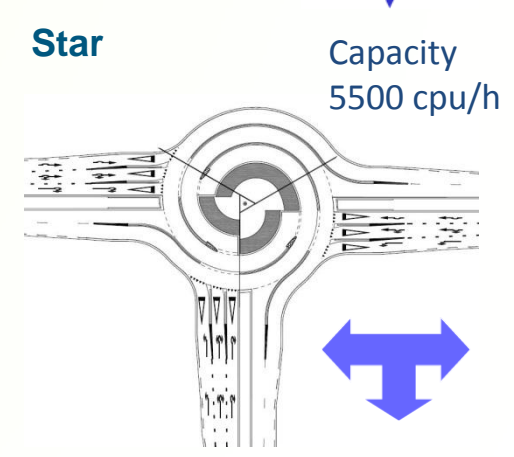
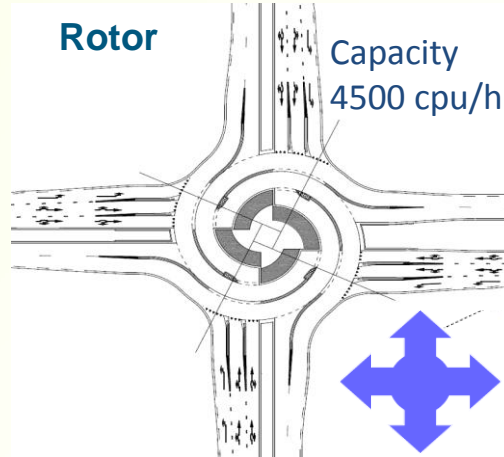
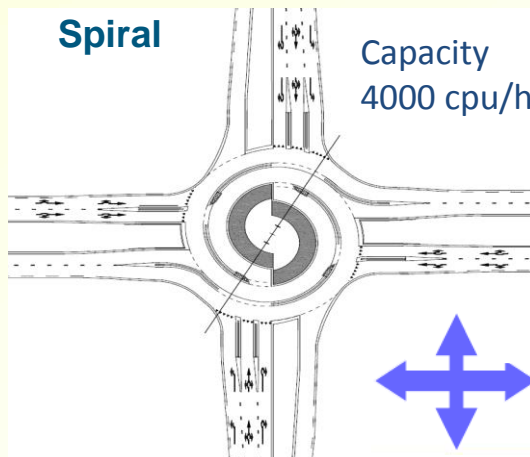
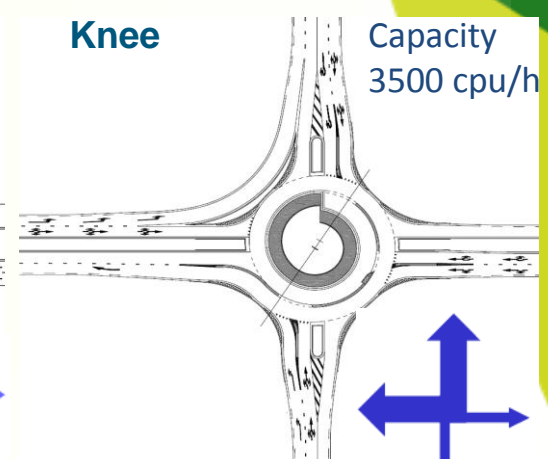
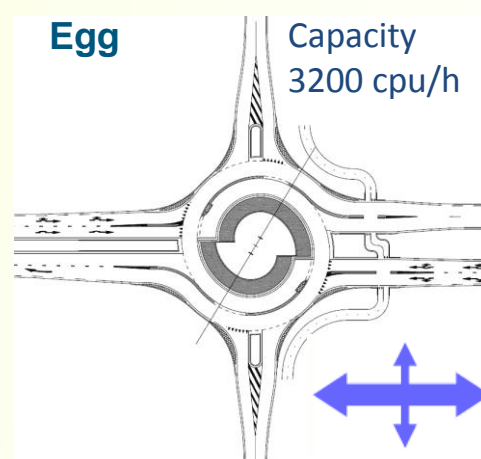
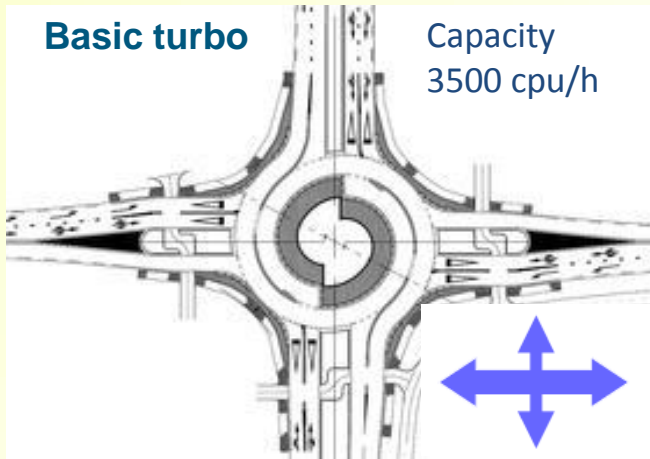
With higher capacity

Vehicles per hour	Minimum	Maximum
Junction give way	1.500	1.800
Single lane roundabout	2.000	2.700
Multi lane roundabout (1 exit)	2.200	3.600
Multi lane roundabout (2 exits)	3.000	3.600
Multi lane roundabout (2 entry, 2 exits)	3.500	4.000
Turbo roundabout (basic)	3.500	3.800
Turbo roundabout (rotor)	4.000	5.000
Junction with traffic lights	3.500	8.000

With more safety

From	To	Injury accidents
Junction give way	Single lane roundabout	-70%
Junction give way	Turbo roundabout	- 70%
Single lane roundabout	Turbo roundabout	+20%
Multi lane roundabout	Turbo roundabout	- 53%
Junction wit traffic lights	Turbo roundabout	- 50%

Different types turbo roundabouts



And each also designs with three legs

The first (2000)

Barendrecht
Photo: Cyclomedia



Since (2008)

Wijk bij Duurstede
Photo: Bing.com

Let's make it more beautiful

Rosmalen (2010)
Photo:
www.degrootewielenonline.nl

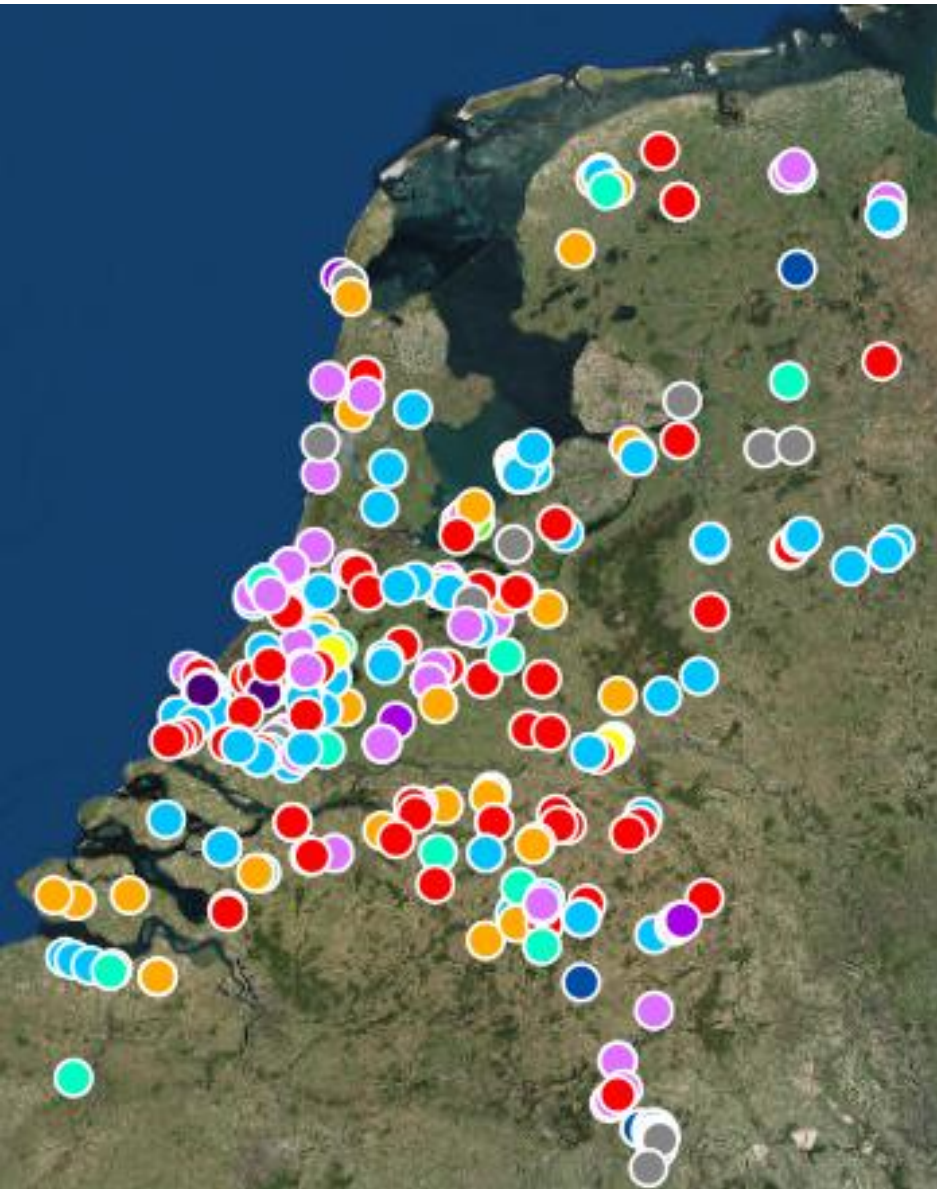




Dordrecht (2010)

Photo: cyclomedia

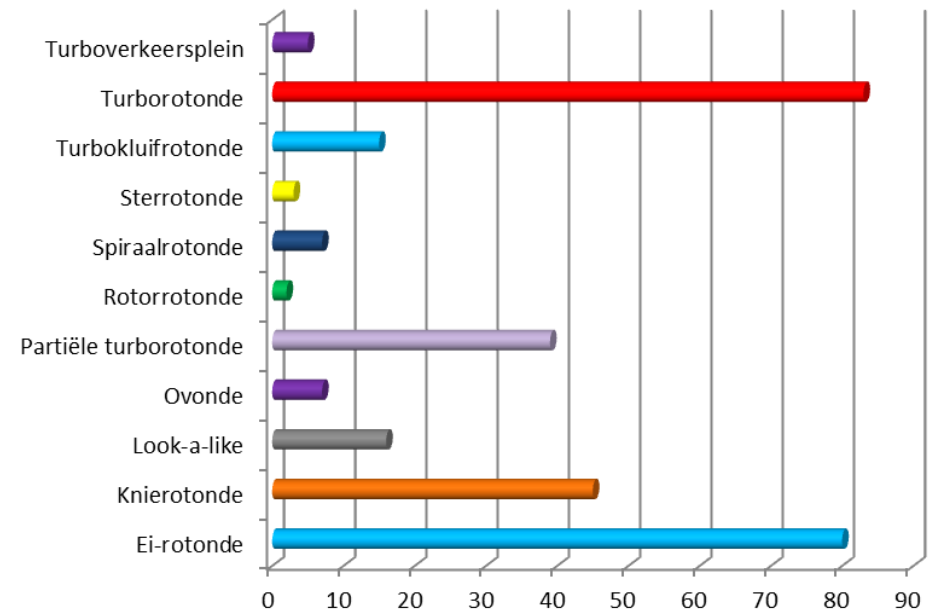
Locations turbo roundabouts

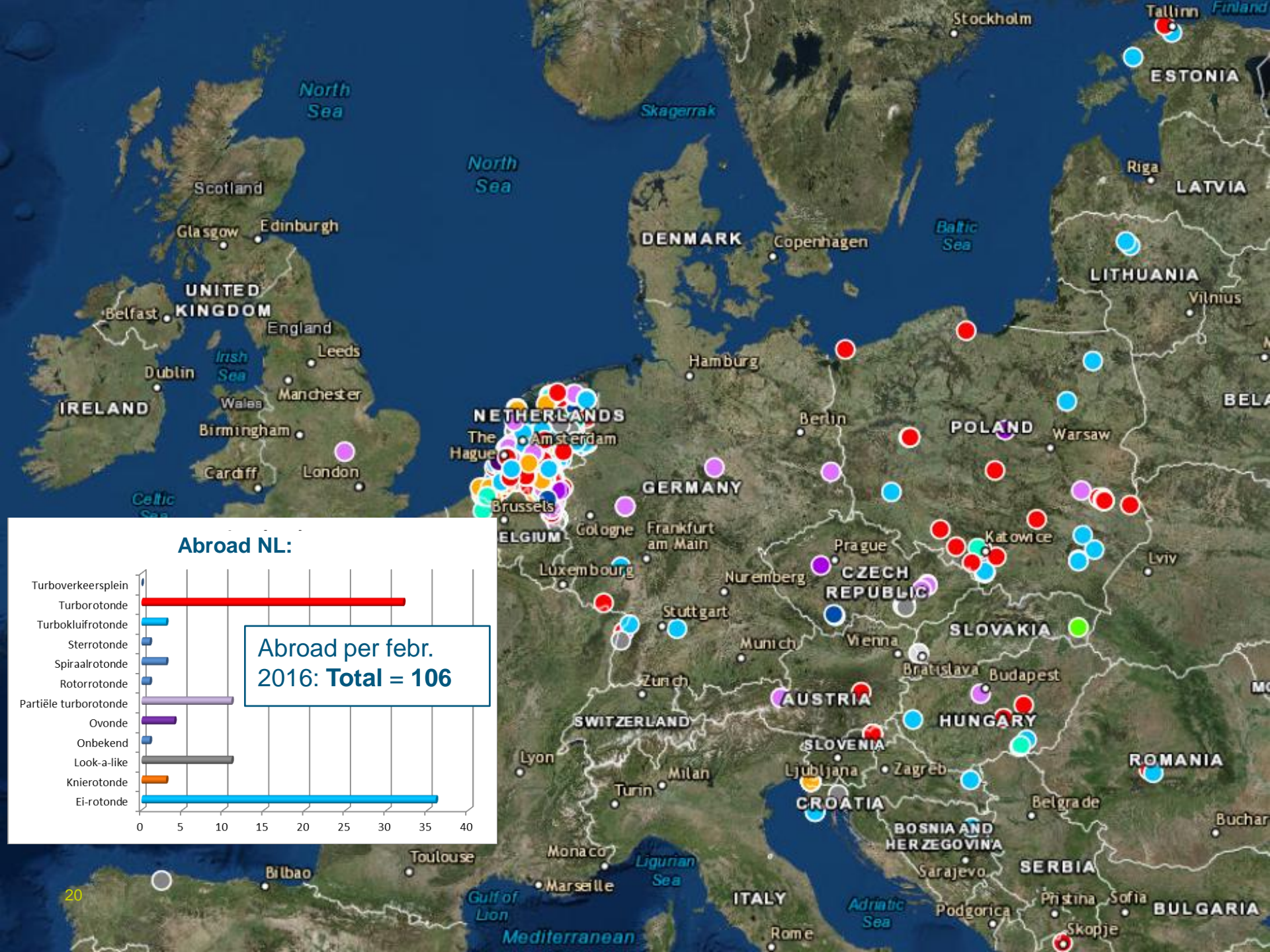


Total in NL: **309** (Febr. 2016)

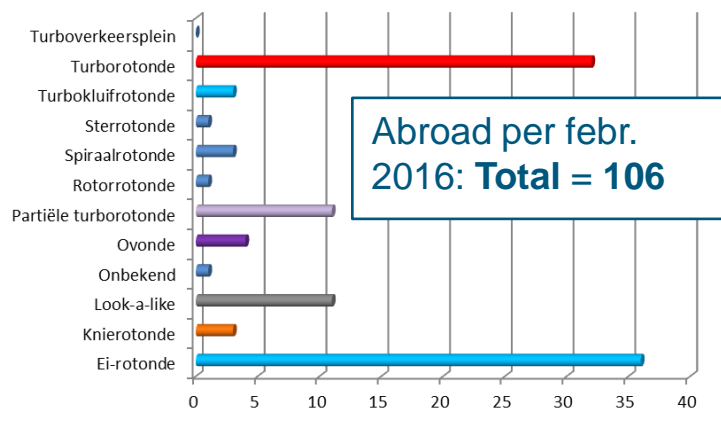
www.turborotonde.nl

The Netherlands:





Abroad NL:



Abroad per febr.
2016: Total = 106

Questions??

