



Gemeente Amsterdam

Network Safety Index Amsterdam: How safe is our road infrastructure?

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Content

Why a network safety index?

Who made it, was involved?

What did we do?

How we use it?

Are we finished?



Why?

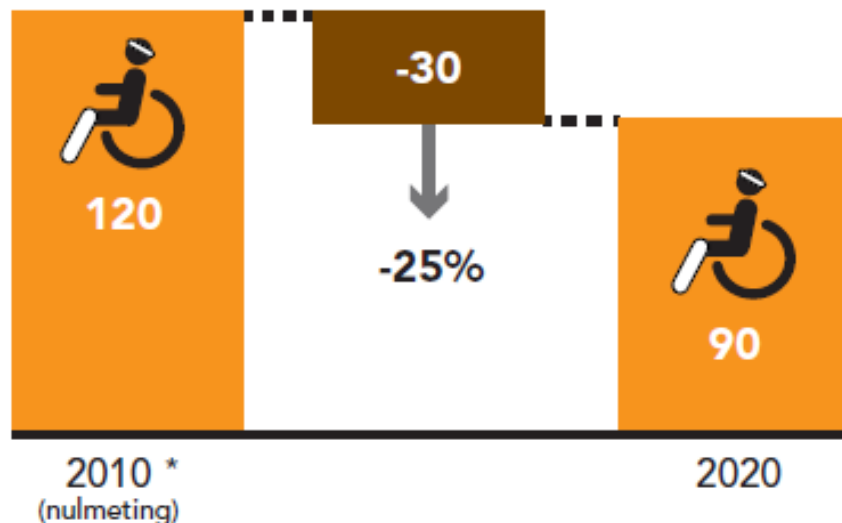
New Strategic Traffic Safety Plan 2016 - 2021

Following national target:

25% reduction on people killed in traffic & severely injured in 2020 as to 2010.



Per 100.000 inhabitants





Strategy:

prevention of accidents by eliminating cause for different target groups.

What's our targetgroup?

What goes wrong:

- infrastructure,
- behaviour,
- vehicle

What is the best measure?



Het gedrag van de weggebruiker



De kwaliteit van de infrastructuur (weginrichting en verkeersregelingen)



De technische kwaliteit van een voertuig

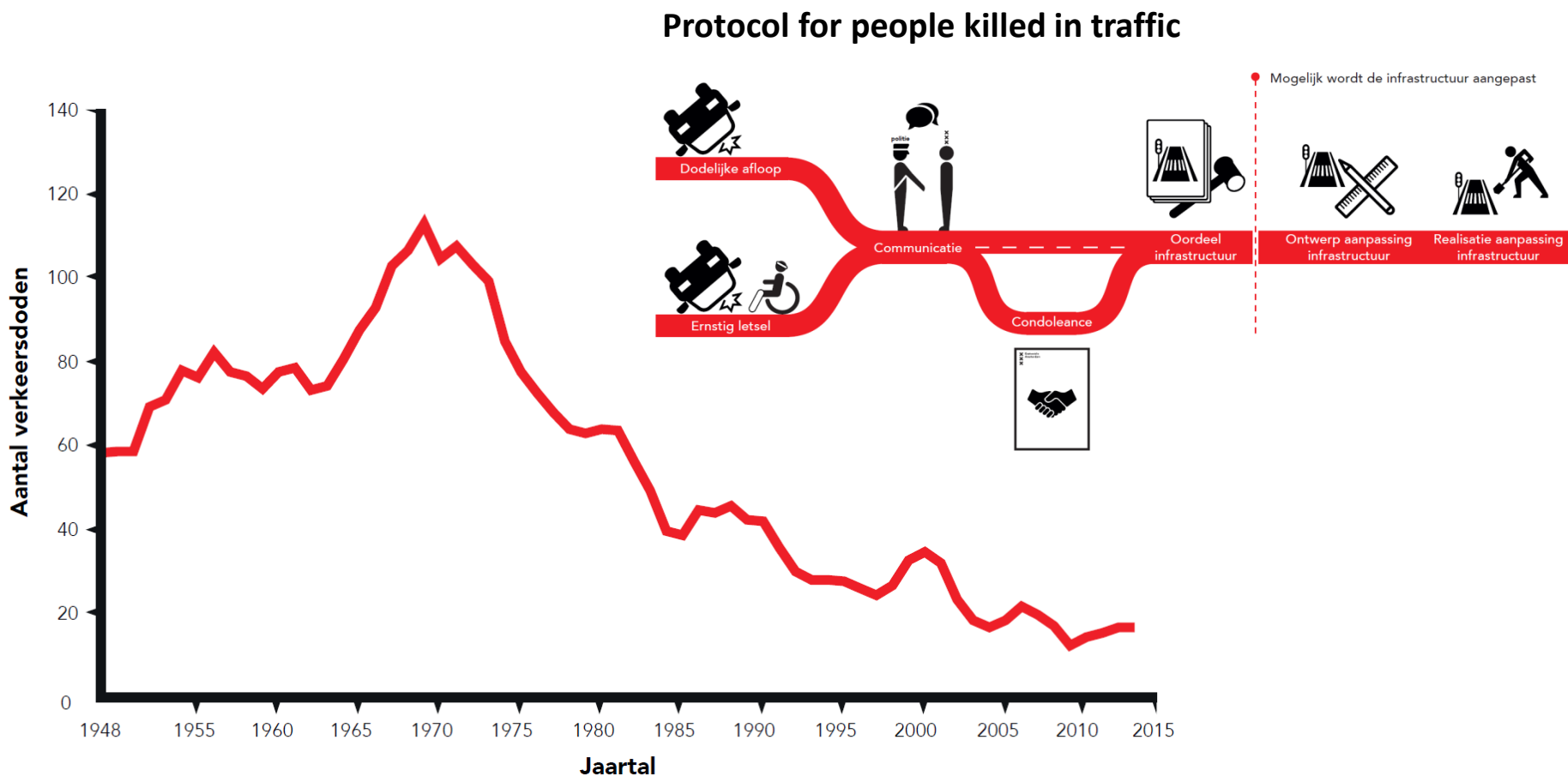




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25% reduction: how are we doing? Fatalities

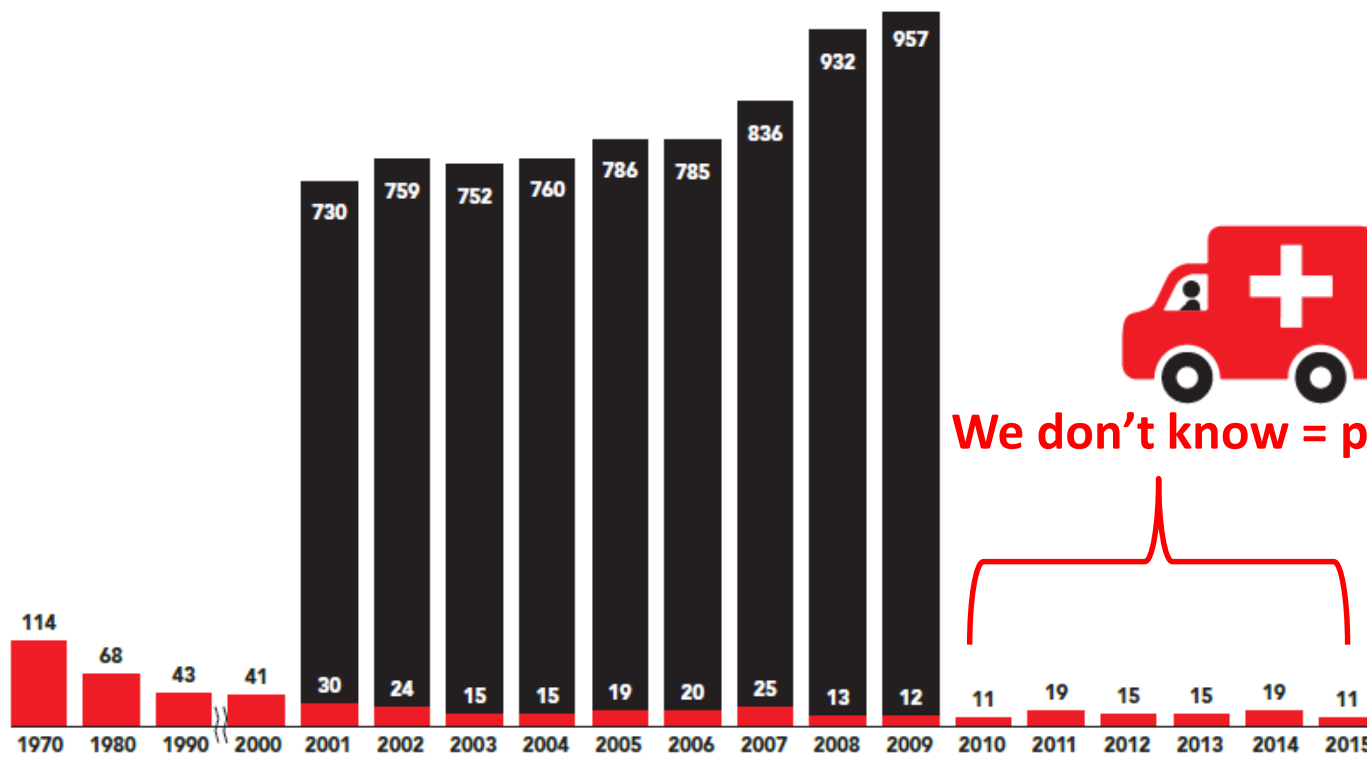




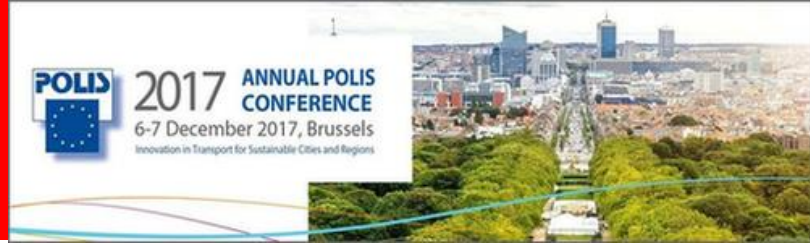
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25% reduction: how are we doing? Severely injured (mais >2)



We don't know = problem !!



Use of safety performance indicator's in policy making. Why?



Because of a lack of accurate accident data!!

But ...with a strong scientific relationship ('evidence based') between safety indicators and road safety:

- we get more transparency in measures and effect
- we go from a re-active to a pro-active approach
- in co-operation with stakeholder (asset-management, police, schools)
- finally, with more emphasis on road users personal responsibility (communication)

XXX Safety Performance Indicators

What goes wrong in traffic behaviour?





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What is wrong with infrastructure? Network Safety Index (NSI)



Network Safety Index

ProMeV

CycleRAP
(36 characteristics)

Speed (GSVS)

Sustainable Safety
instrument

+ traffic volume and ambulance data



What did we do?

- 4 months data collection (8 pers.)
- ± 20.000 profiles of 25 meter road segments (50km/h)
- Scores for every 25 meter road, based on panorama images

Inventarisatie

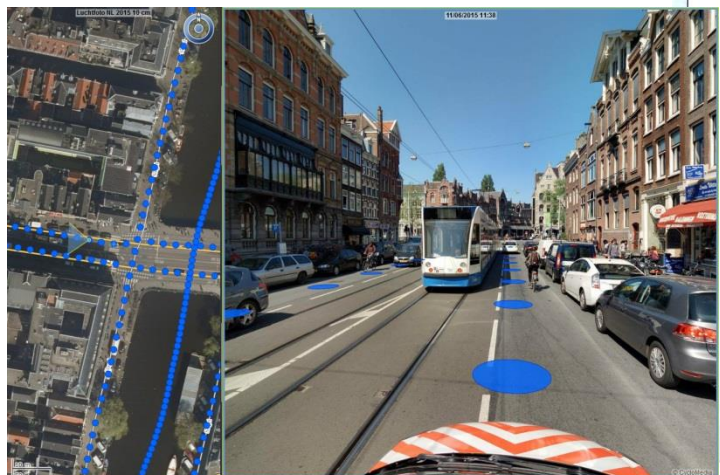
Straatnaam: Lengte:

Zekerheid meting:

Omschrijving vraag:

VsGs/DV Fietspad

	Heen	Terug		Heen	Terug
Intensiteit	<input type="text" value="2000"/>	<input type="text"/>	Versmalling	<input type="text" value="Geen of nauwelijks"/>	<input type="text"/>
Soort kruising / aantal tal	<input type="text" value="VRI"/>	<input type="text" value="Drietaks"/>	Hoogteprofiel	<input type="text" value="Vlak"/>	<input type="text"/>
Zicht kruispunt	<input type="text" value="Geen belemmeri"/>	<input type="text" value="Enigszins belemni"/>	Tramrails	<input type="text" value="Ja, in gedeelde ruimte"/>	<input type="text"/>
Voorziening	<input type="text" value="Fietssuggestiestr"/>	<input type="text" value="Rijbaan"/>	Overgang - Kwaliteit	<input type="text" value="Voldoende"/>	<input type="text"/>
Voorziening, anders nl:	<input type="text"/>	<input type="text"/>	Overgang - Type	<input type="text" value="Opsluitband - overrijd"/>	<input type="text" value="Parkeervak langs rijba"/>
Bijz. voorziening fiets	<input type="text" value="Brug"/>	<input type="text" value="Tunnel"/>	Straatverlichting	<input type="text" value="Ja"/>	<input type="text"/>
Rijrichtingen fietspad	<input type="text" value="Eenrichtingspad"/>	<input type="text" value="Tweerichtingspa"/>	Markering	<input type="text" value="Links en Rechts"/>	<input type="text"/>
Zicht rijbaan rechtsafsl.	<input type="text" value="Geen belemmeri"/>	<input type="text" value="Ernstig belemme"/>	Paal in pad	<input type="text" value="Ja"/>	<input type="text"/>
Rijrichtingen rijbaan	<input type="text" value="Tweerichtingen"/>	<input type="text" value="Tweerichtingen"/>	Paal - Zicht	<input type="text" value="Voldoende"/>	<input type="text"/>
Ligging	<input type="text" value="Niet Solitair Binn"/>	<input type="text" value="Niet Solitair Binn"/>	Middeneiland - Aanwezig	<input type="text" value="ja"/>	<input type="text"/>
Omgeving	<input type="text" value="Winkel- / uitgaar"/>	<input type="text"/>	Middeneiland - Zicht	<input type="text" value="Voldoende"/>	<input type="text"/>
Verhardingsbreedte	<input type="text"/>	<input type="text"/>	Berm - Kwaliteit	<input type="text" value="Aandachtspunt"/>	<input type="text"/>
Verharding - Type	<input type="text" value="Open"/>	<input type="text" value="Open"/>	Berm - type	<input type="text" value="Hek of muur binnen 1"/>	<input type="text" value="Parkeervak / gelegenh"/>
Verharding - Kwaliteit	<input type="text" value="Voldoende"/>	<input type="text" value="Voldoende"/>	Obstakel - Afstand	<input type="text" value="0.5-1 meter"/>	<input meter"="" type="text" value("<0.5=""/>
Uitritten aanwezig	<input type="text" value="Ja"/>	<input type="text"/>	Werk in uitvoering	<input type="text" value="Nee"/>	<input type="text"/>





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Example cycling infrastructure: CycleRAP

- Quality of cycling paths (width, pavement, shoulder)
- Obstacles (bollards, distance to obstacles)
- Longitude/altitude profile (crossings, view, curves, narrowing, slope, illumination, marking, presence of tram)





Calculation index score by street (bottlenecks density)

Street A: 25 meter parts cycling infrastructure; Score: amount unsafe characteristics per type (a.- f.)																			Amount Scores>2
4	0	2	1	5	0	0	1	3	1	0	2	0	2	4	0	1	1	3	5
a.				a.			a.						a.				a.		
	b.			b.					b.				b.				b.		b.
c.	c.			c.				c.					c.				c.		
d.		d.					d.						d.				d.		d.
e.				e.			e.						e.				e.		e.
				f.			f.						f.				f.		f.

$$\frac{\text{Ongevallen}}{L} \text{ (NSI)}$$

$$= \text{MVTintensiteit}^{0,385} \times \text{Fietsintensiteit}^{0,465} \times e^{((\text{LengteHoogte_q50_Dichtheid} \times 0,480 + \text{Obstakels_Dichtheid} \times 1,00 + \text{KleineKruispunten_dichtheid} \times 36,8 + \text{Ronde_Dichtheid} \times 200 + \text{GS_VcredscoreDichtheid} \times -0,541 + \text{TramBusAanwezig} \times 0,572 + \text{Intercept} - 10,2))}$$



Stratnaam: All

NSI score / street

Cycle Rap

Score: proportie onveilige wegdelen (straat)

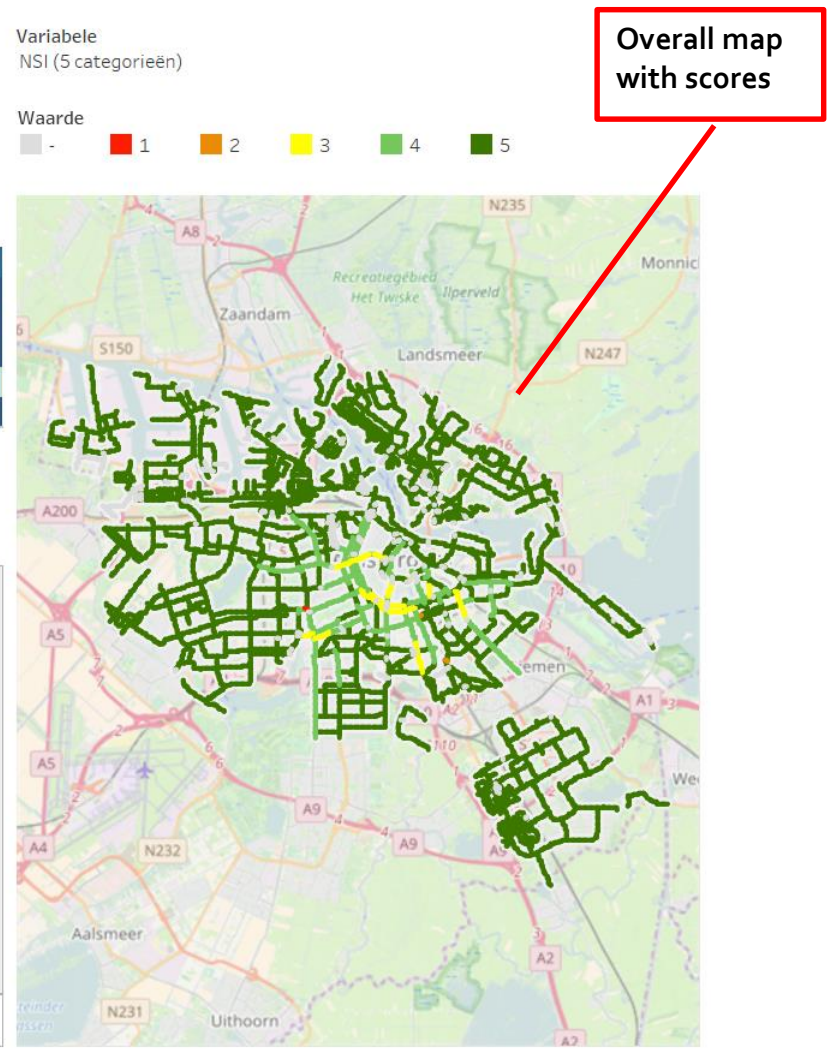
Stratnaam	NSI..
Purmerplein	5
Purmerweg	5
Raadhuisstraat	3
Raasdorperweg	5
Radarweg	5
Ranonkelkade	5
Reigersbosdreef	5
Rhijnspoorplein	4
Rhoneweg	5
Ribesstraat	5
RIDDERSPOORWEG	5
Rigakade	5
Rijnstraat	3
Rijswijkstraat	-
Ringvaartdijk	5
Robert Fruinlaan	5
Roelof Hartplein	-
Roelof Hartstraat	4
Roesiël	5
Roetersstraat	3
Rokin	4
Rooseveltlaan	5
Rozenburglaan	5
Rozengracht	3
Ruigoord	5
Ruijgoordweg	5
Ruys de Beerenbroucks..	5
Ruyschstraat	5

streetname

Variabele	Raadhuisstraat
Fietsinfrastructuur Kwaliteit	0,89
Fietsinfrastructuur Obstakels	1,00
Fietsinfrastructuur LengteHo	1,00
Duurzame veiligheid	1,00
Geloofwaardige snelheid	0,11
Veilige snelheid	1,00

Individuele kenmerken

Variabele	7966	Meetpunt
DrempelWegvak (heen)	Geen	
Erfaansluiting (L)	0	
Erfaansluiting (R)	0	
Fiets / Bromfiets (L)	Verplicht fietspad	
Fiets / Bromfiets (R)	Verplicht fietspad	
ObstakelvrijeAfstandL	0,8	
ObstakelvrijeAfstandR	0	
Oversteekplaats	Geen	
Oversteekplaatssterug	Geen	
OVHalteTerug	Geen	
ParallelvoorzieningL	Geen	
ParallelvoorzieningR	Geen	
ParkerenL	Geen	
ParkerenR	Vakken ast de weg	
PechvoorzieningL	Geen	
PechvoorzieningR	Geen	





Are we finished?

NO!

- NSI was just released.
- Proof of the pudding is in the eating.
- Automated up-dating of data
- Maintenance of data

Development of NSI-light



Concluding remarks & recommendations

- SPI's and NSI are not a replacement for traffic accident data --> investments are still needed
- Measuring of spi's and NSI asks for large investments, but helps:
 - towards politics (accountability)
 - To prioritize (i.e. enforcement or reconstruction of roads)
 - Policy evaluation and –monitoring
 - different disciplines in- and outside the organisation (asset-management, policy advisors, road designers, communication, police, education, ...)