

SWOV

INSTITUTE FOR
ROAD SAFETY RESEARCH

Cycling infrastructure

In the Netherlands

Masha Odijk

PIN Talk – April 2026

1.

Bicycle
infrastructure in
the Netherlands

2.

Single bicycle
crashes in the
Netherlands

3.

Infrastructural
measures to
reduce single
bicycle crashes

Bicycle paths



& bicycle lanes

Main principle

**Separate cyclists from
motor vehicle traffic
when speeds are over
30 km/h**



50 km/h urban distributor roads



46% cyclists on the carriageway



54% separated

No facility residential streets



& bicycle streets

Intersections



with motorvehicles

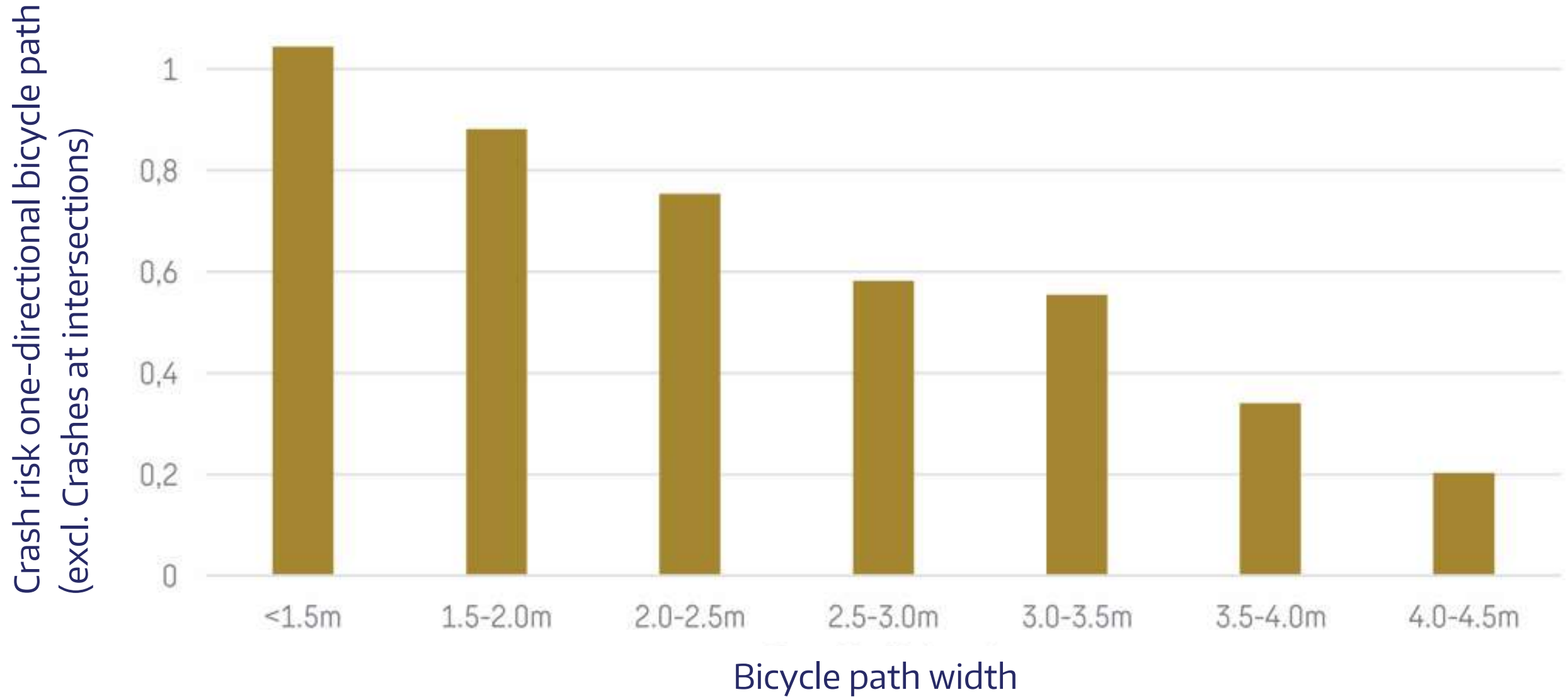
Intersections



with other cyclists



**On bicycle facilities
heterogeneity, speed and
mass differences are
increasing**



Bicycle path width in relation to crash risk

Infrastructure strongly relates to crash risk for cyclist; both crashes with other vehicles and single bicycle crashes



Cyclists among total traffic fatalities



35%

Odijk, M.J.M., Oude Mulders, J. *Achtergronden bij De Staat van de Fietsveiligheid 2025* (2025). SWOV, Den Haag. R-2025-7A. CBS. *Meer verkeersdoden in 2025* (April 2026). <https://www.cbs.nl/nl-nl/nieuws/2026/15/meer-verkeersdoden-in-2025>.

Bicycle fatalities from single bicycle crashes

**One-in-
three**

Odijk, M.J.M., Oude Mulders, J. *Achtergronden bij De Staat van de Fietsveiligheid 2025* (2025). SWOV, Den Haag. R-2025-7A. CBS. *Meer verkeersdoden in 2025* (April 2026). <https://www.cbs.nl/nl-nl/nieuws/2026/15/meer-verkeersdoden-in-2025>.

Seriously injured cyclists from single bicycle crashes



**80% of serious injury
bicycle crashes is
without involvement of
a motorvehicle**

Single





Motor vehicle involved

Single



No motor vehicle involved

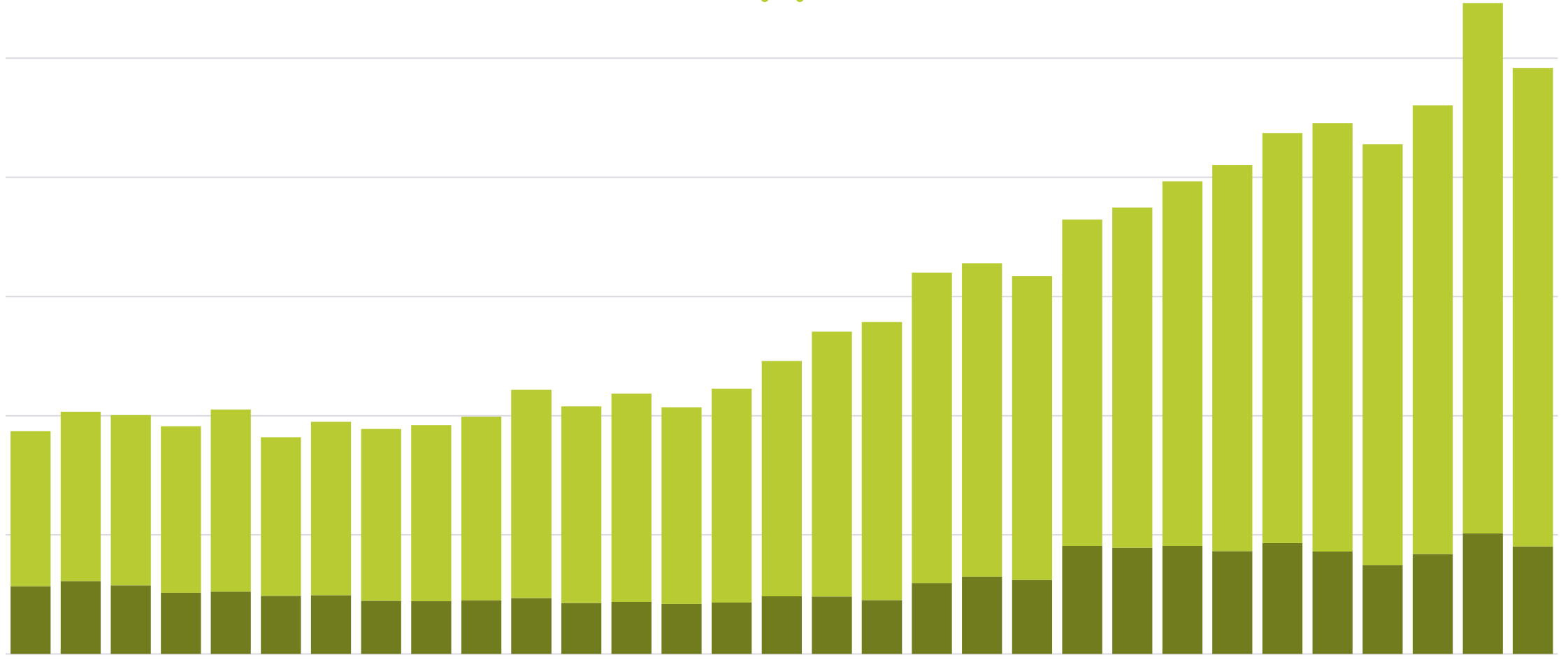
Seriously injured cyclists

5000
4000
3000
2000
1000
0

1993

Year

2023

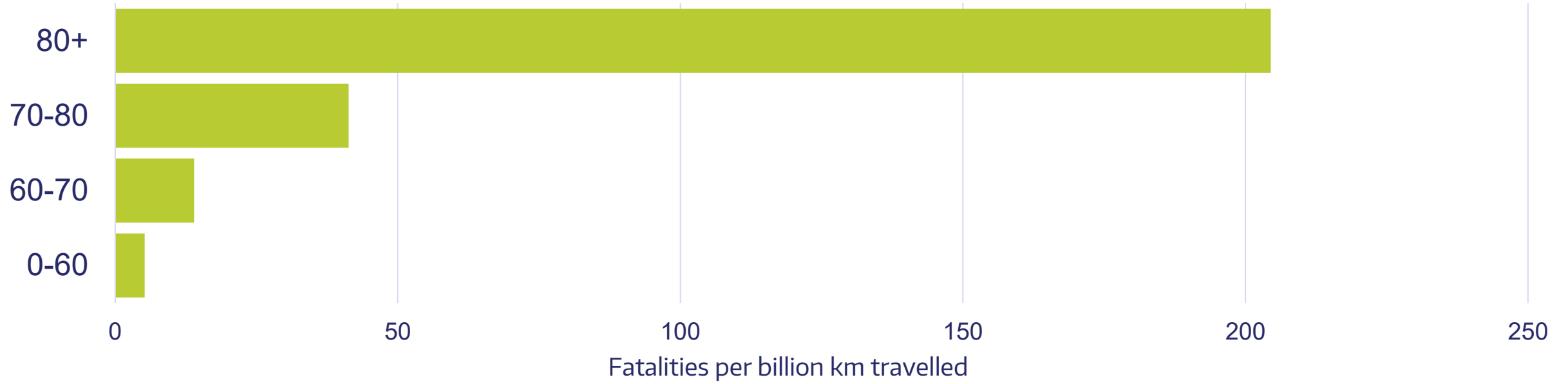


Serious injury bicycle crashes in the Netherlands

Risks are not the same...

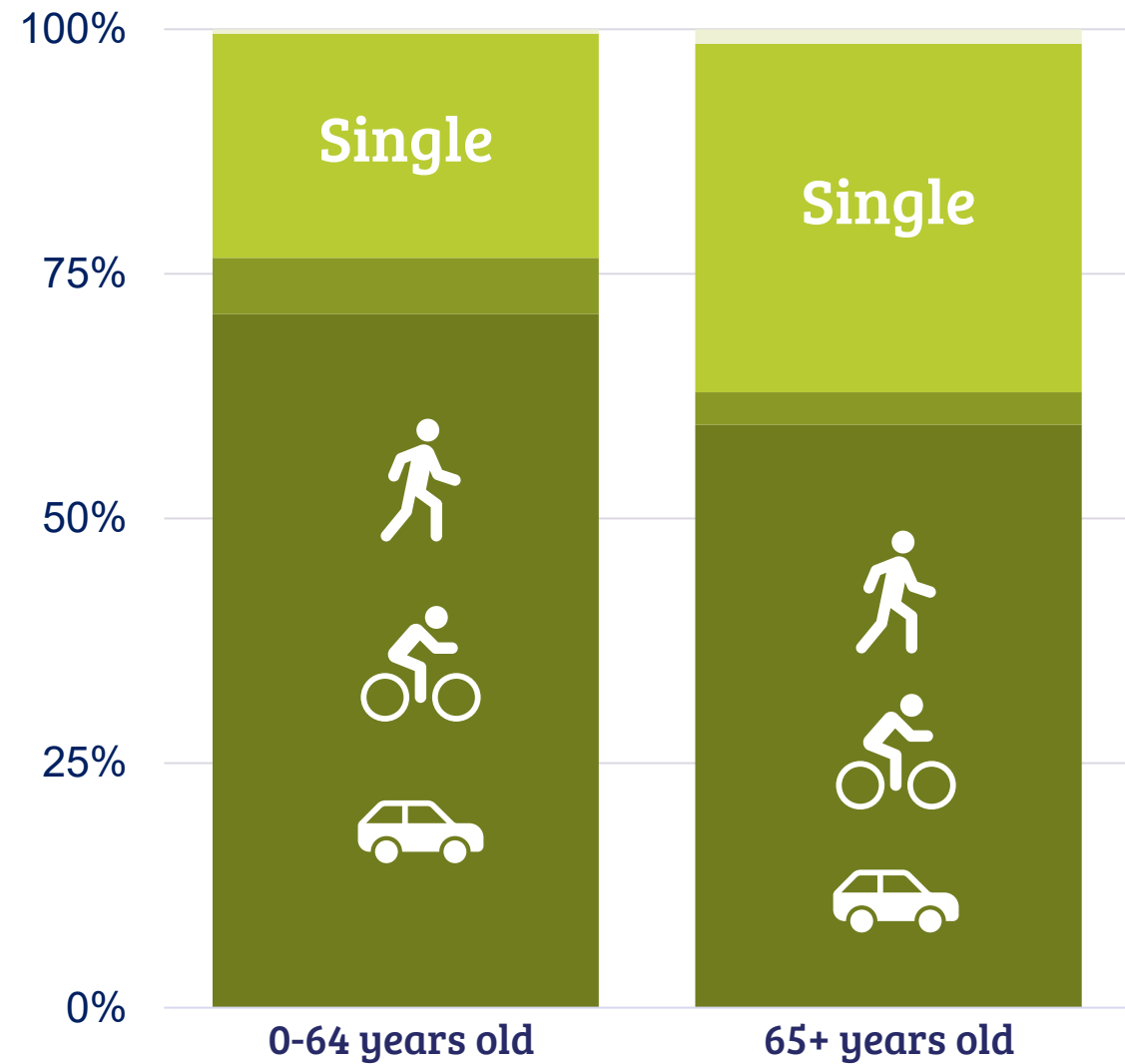


...for all cyclists



Elderly have a higher risk of death or injury on the bike

Single bicycle crashes more often fatal amongst elderly



Infrastructural measures to reduce single bicycle crashes



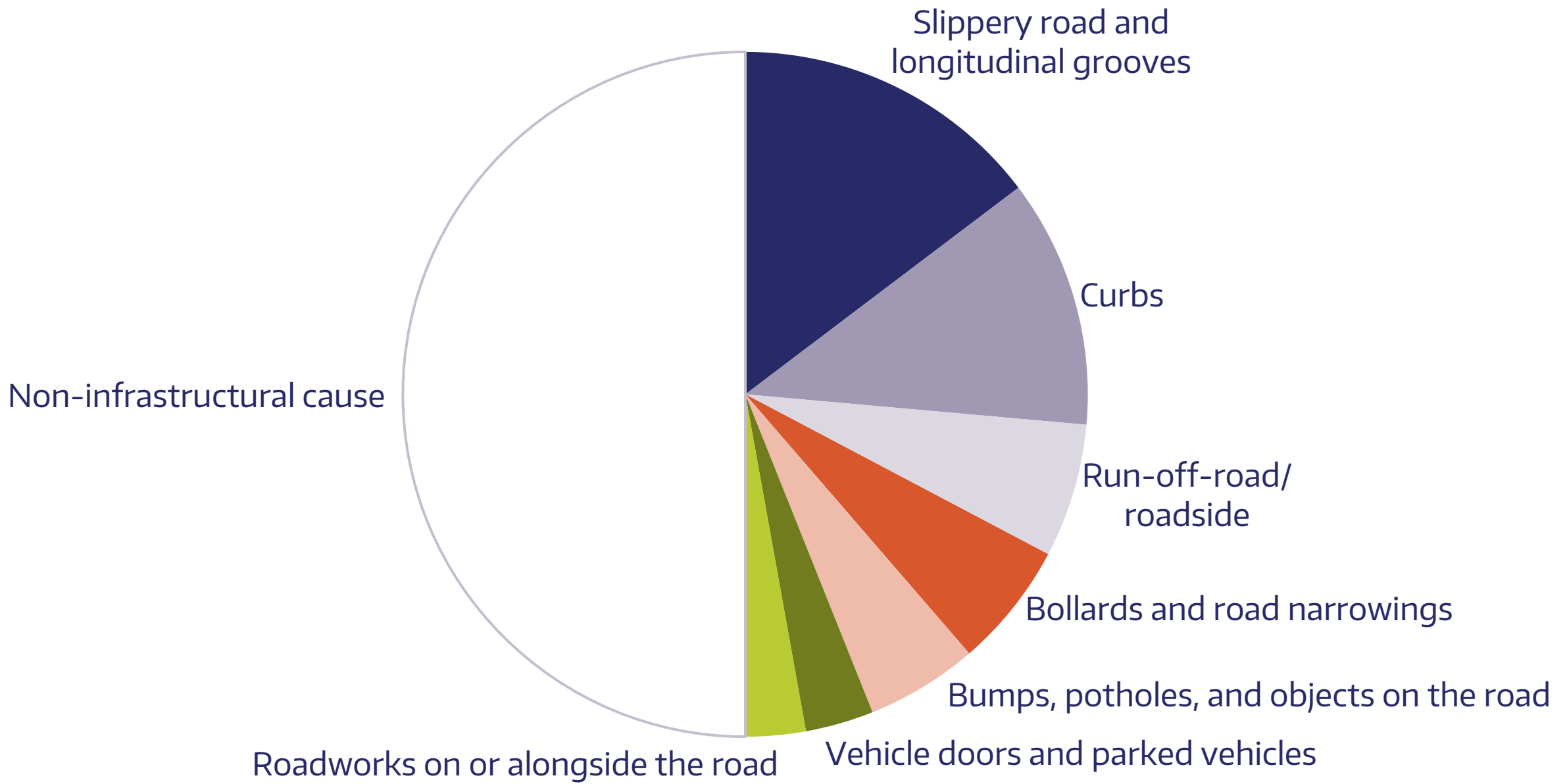
**Crashes are caused by a
complex combination of
circumstances**



Infrastructure as a cause of single bicycle crashes



50%



Role of infrastructure in single bicycle crashes

Crashes as a result of run-off-road events

50% reduction



Crashes due to slippery roads and longitudinal grooves

50% reduction



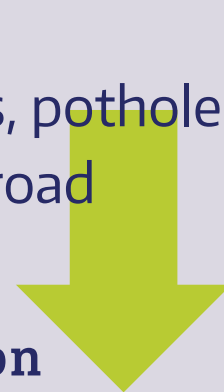
Crashes with bollards and road narrowings

100% reduction



Crashed caused by bumps, potholes and objects on the road

75% reduction



Potential crash reduction of

75% ↓

**Out of balance
due to bumps
and potholes**

**Apply closed pavement
rather than open;
Consider proper
greenery/tree types**

Weijermars, W.A.M., Wijnen, W. *Verkeersveiligheidsverkenning 2020: effecten van extra maatregelen* (2012). SWOV, Den Haag. R-2012-14.

CROW. *Grip op enkelvoudige fietsongevallen; Samen werken aan een veilige fietsomgeving* (2011). CROW, Utrecht. Fietsberaadpublicatie 19a.

Potential crash reduction of

50%



**Crash against
the curb**

**Curbs are not always
necessary;
Remove them on narrow
roads, choose low and
sloped curbs, or have
them stand out more
(visibly)**

Potential crash reduction of

50% ↓

**Run-off-the-
road and fall
on the
roadside**

**Apply edge lines;
Allow the cyclist time
and space to correct
themselves, by avoiding
height differences and
obstacles on the roadside**

Potential crash reduction of

100% ↓

**Crash into
bollard or road
narrowings**

**Use bollards only when
strictly necessary;
Calm traffic using
measures without
obstacles**



Additional measures to account for current (mobility) trends?



See: Doumen, M.J.A.; Den Blaauwen, T.M.; Boele, M.J.; Wijlhuizen, G.J. *A lifetime of cycling; Literature review on the challenges for older cyclists* (2025). SWOV, The Hague. R-2025-25.

Infrastructural measures to prevent single bicycle crashes:

No obstacles

Prevent the cyclist from crashing into something

Visual guidance

Help cyclists stay on the road

Smooth pavement

Prevent cyclists losing balance and falling

Forgiving roadside

Allow cyclists to correct mistakes

...

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