

Infrastructure changes to reduce single bicycle crashes

In the Netherlands

Masha Odijk

PIN Talk Serious Injuries – 4 nov 2025

1.

Single bicycle
crashes in the
Netherlands

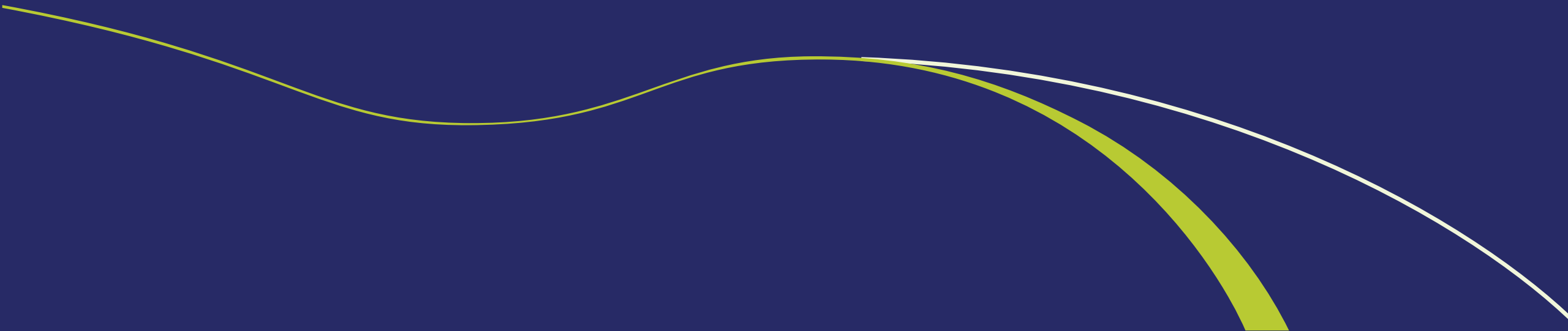
2.

The role of
infrastructure in
single bicycle
crashes

3.

Infrastructural
measures to
reduce single
bicycle crashes

Single bicycle crashes in the Netherlands

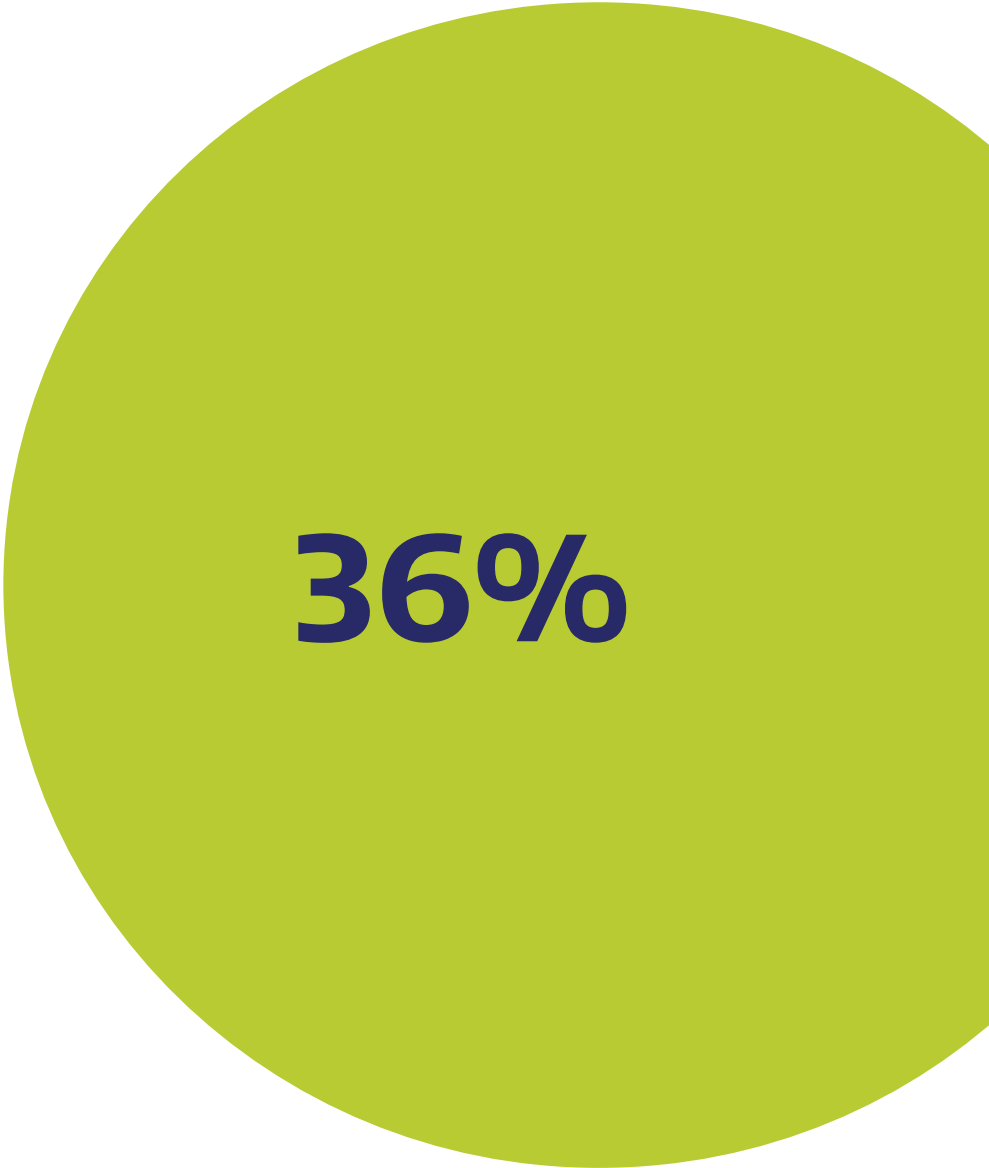




**A single bicycle
crash...**

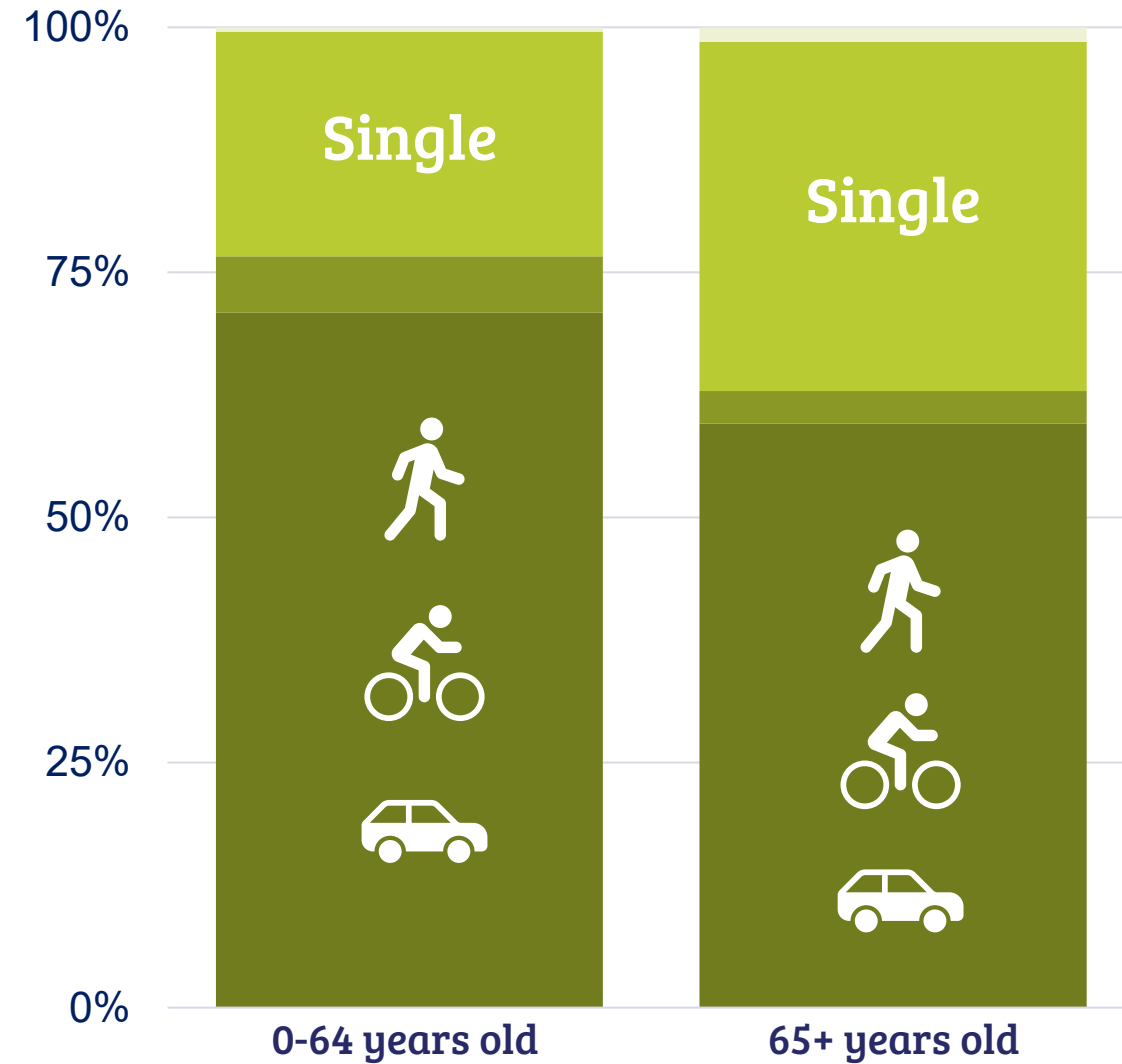
**No other road user
involved in the crash;
Often a fall or crash
against an object**

**Bicycle fatalities from
single bicycle crashes**



36%

Single bicycle crashes more often fatal amongst elderly





Motor vehicle involved

Single



No motor vehicle involved

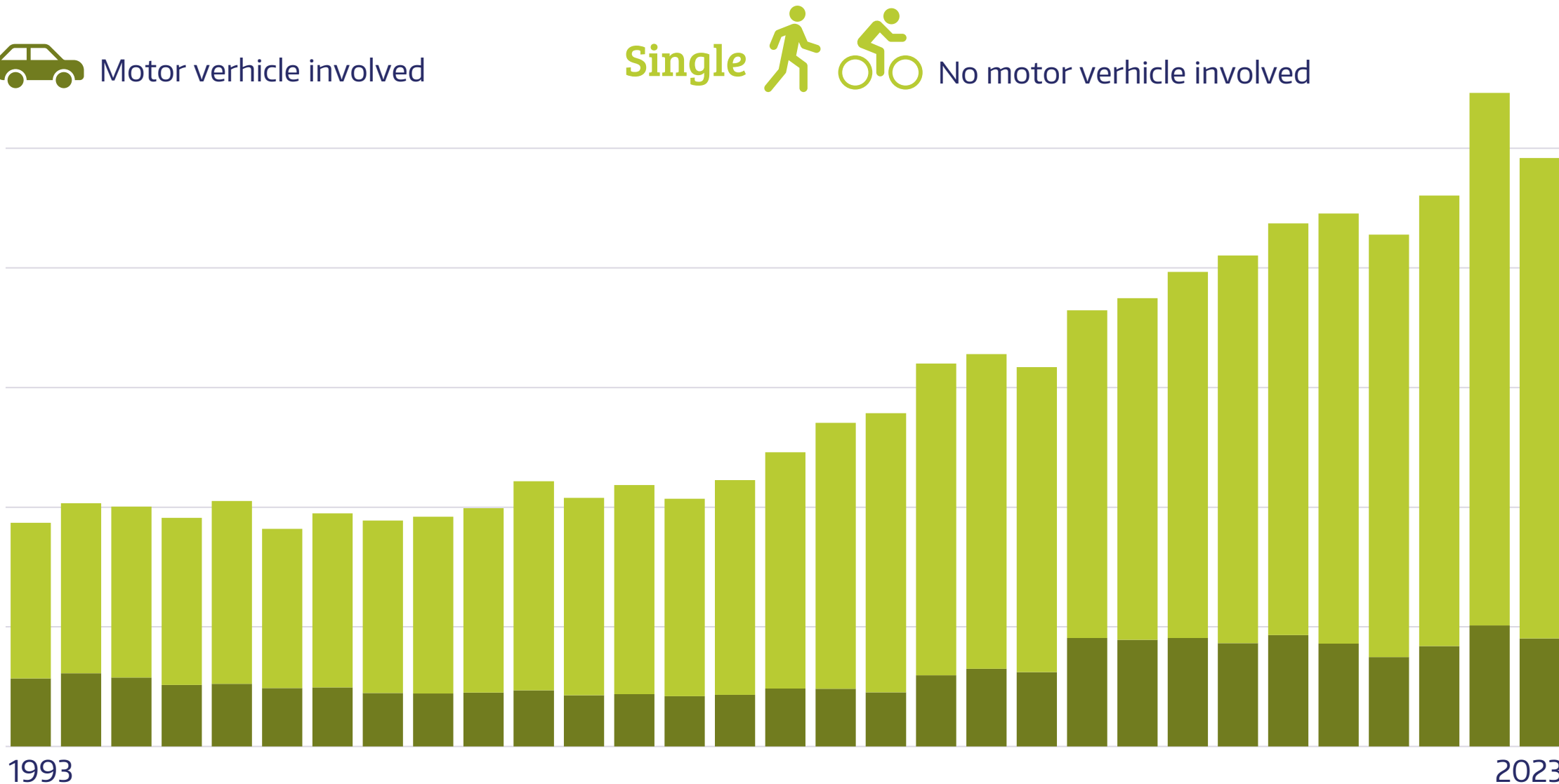
Seriously injured cyclists

5000
4000
3000
2000
1000
0

1993

Year

2023



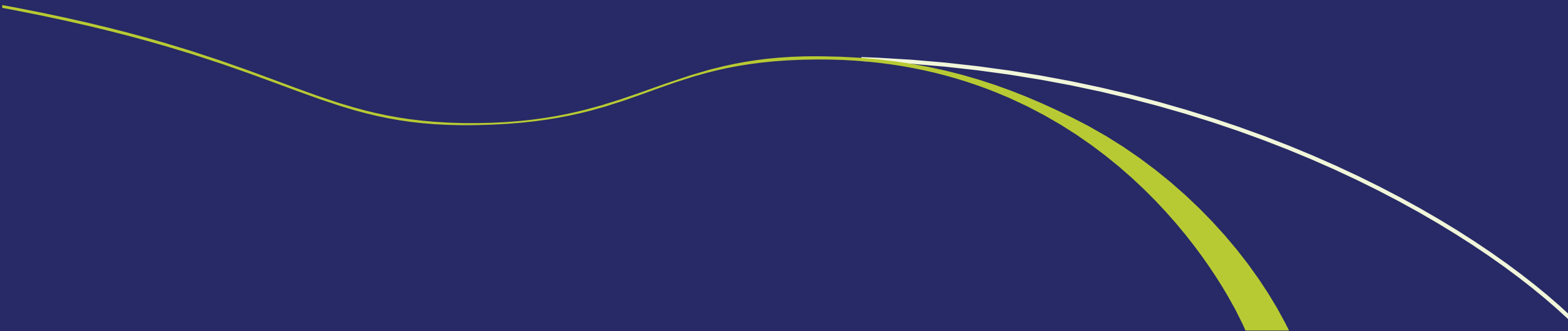
Serious injury bicycle crashes in the Netherlands

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

Single



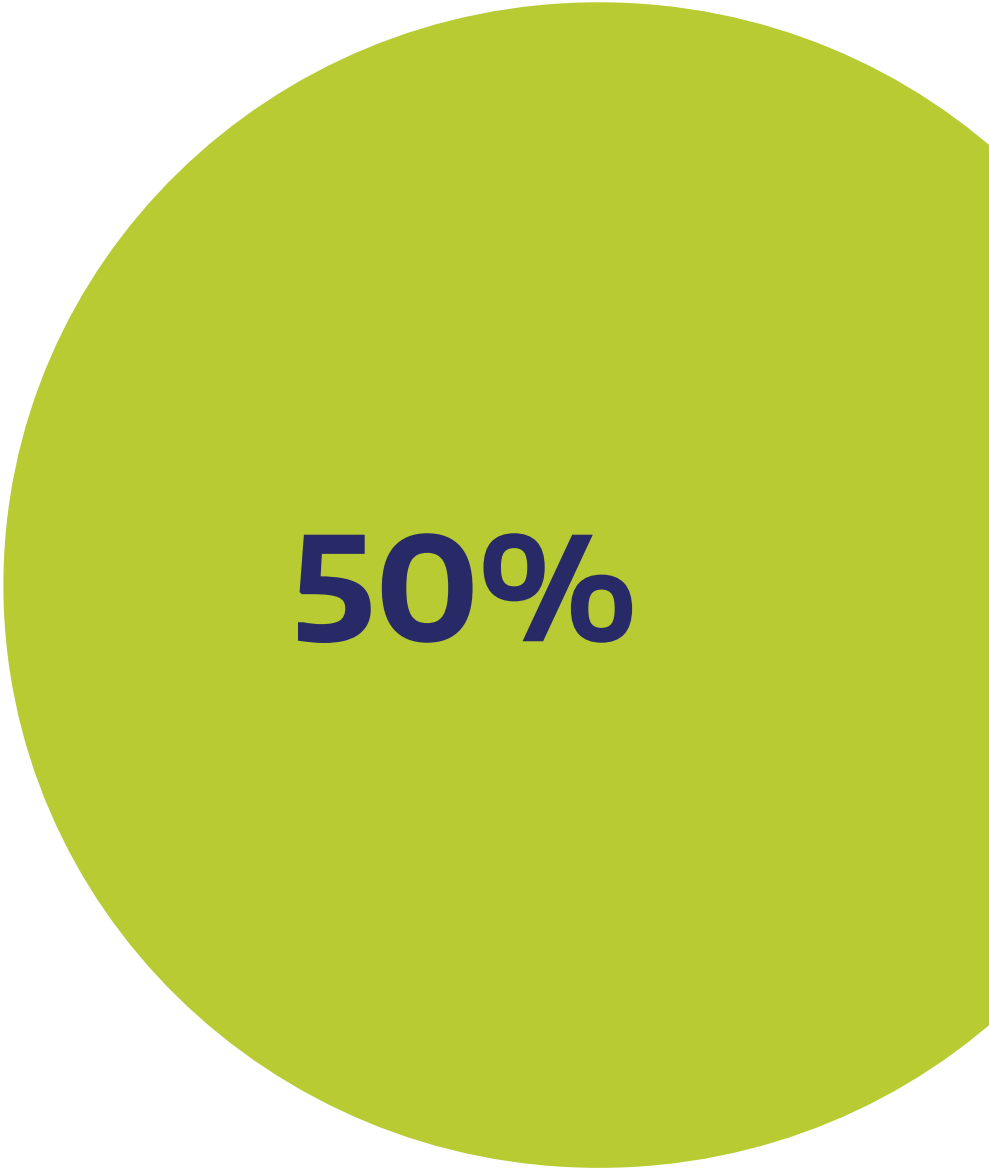
The role of infrastructure in single bicycle crashes



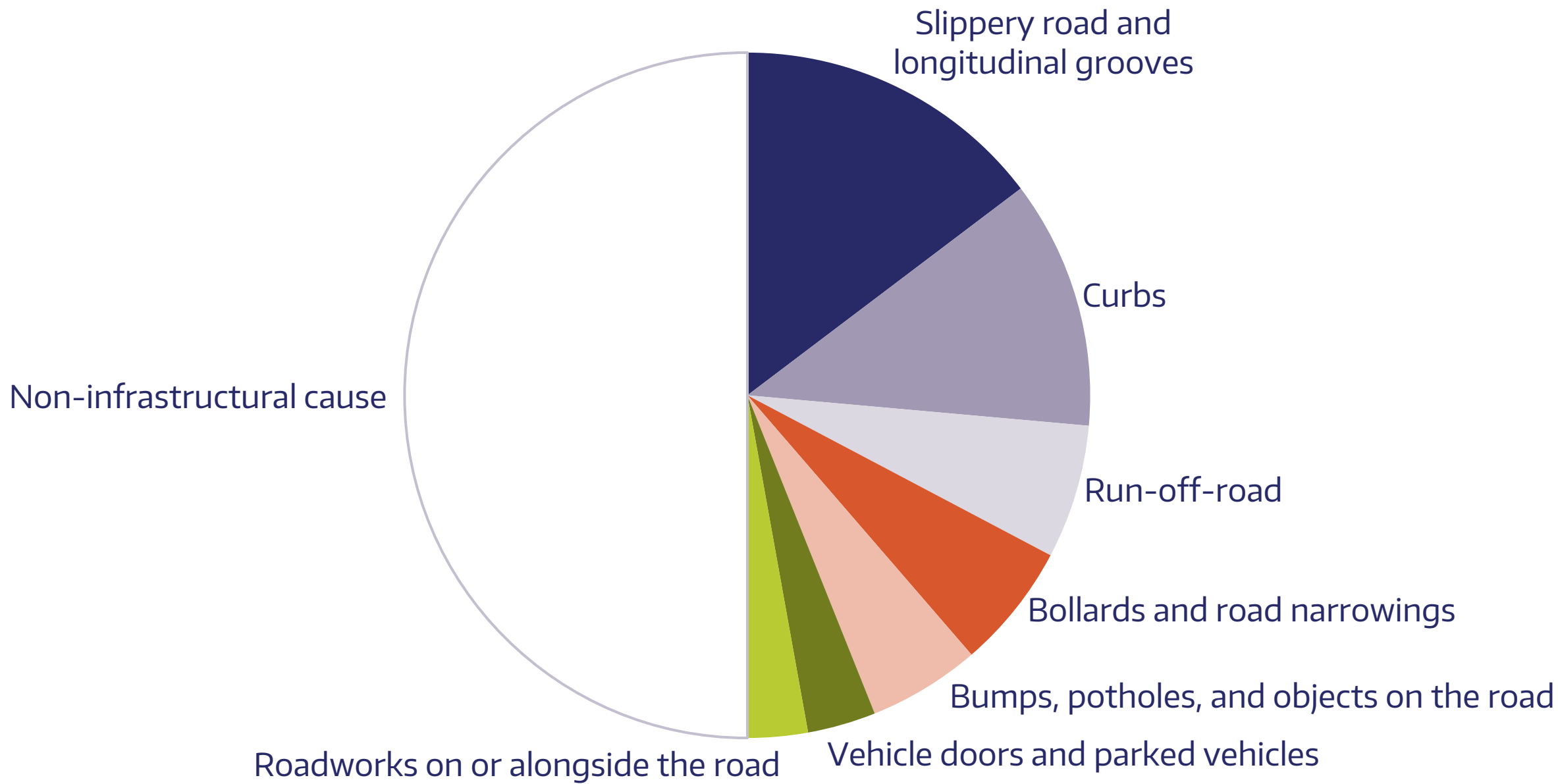
**Crashes are caused by a
complex combination of
circumstances**



Infrastructure as a cause of single bicycle crashes

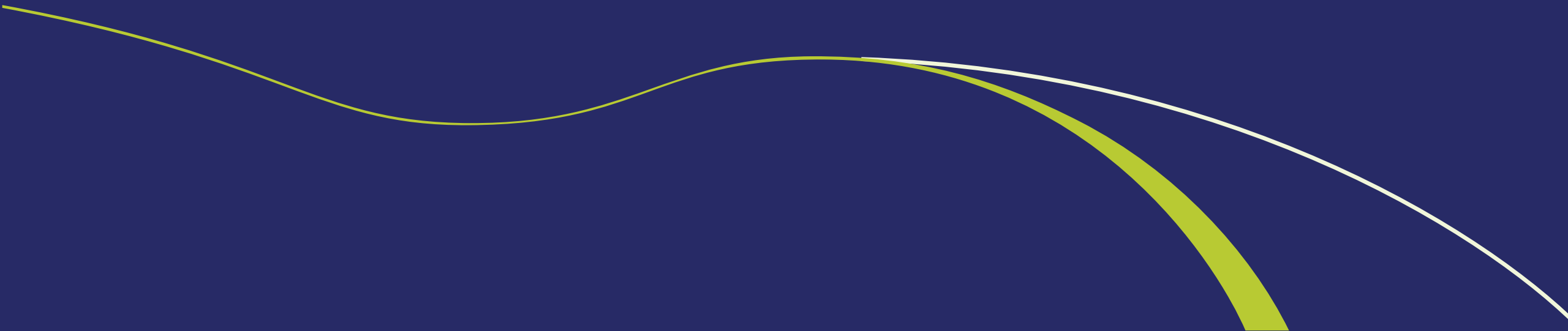


50%



Role of infrastructure in single bicycle crashes

Infrastructural measures to reduce single bicycle crashes



**Even when all (bicycle)
infrastructure is safely
designed and well
maintained...**

**...not all
single bicycle
crashes can
be prevented**

Crashes as a result of run-off-road
events

50% reduction



Crashes due to slippery roads and
longitudinal grooves

50% reduction



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



Crashes as a result of run-off-road events

50% reduction



Crashes with bollards and road narrowings

100% reduction



Crashes due to slippery roads and longitudinal grooves

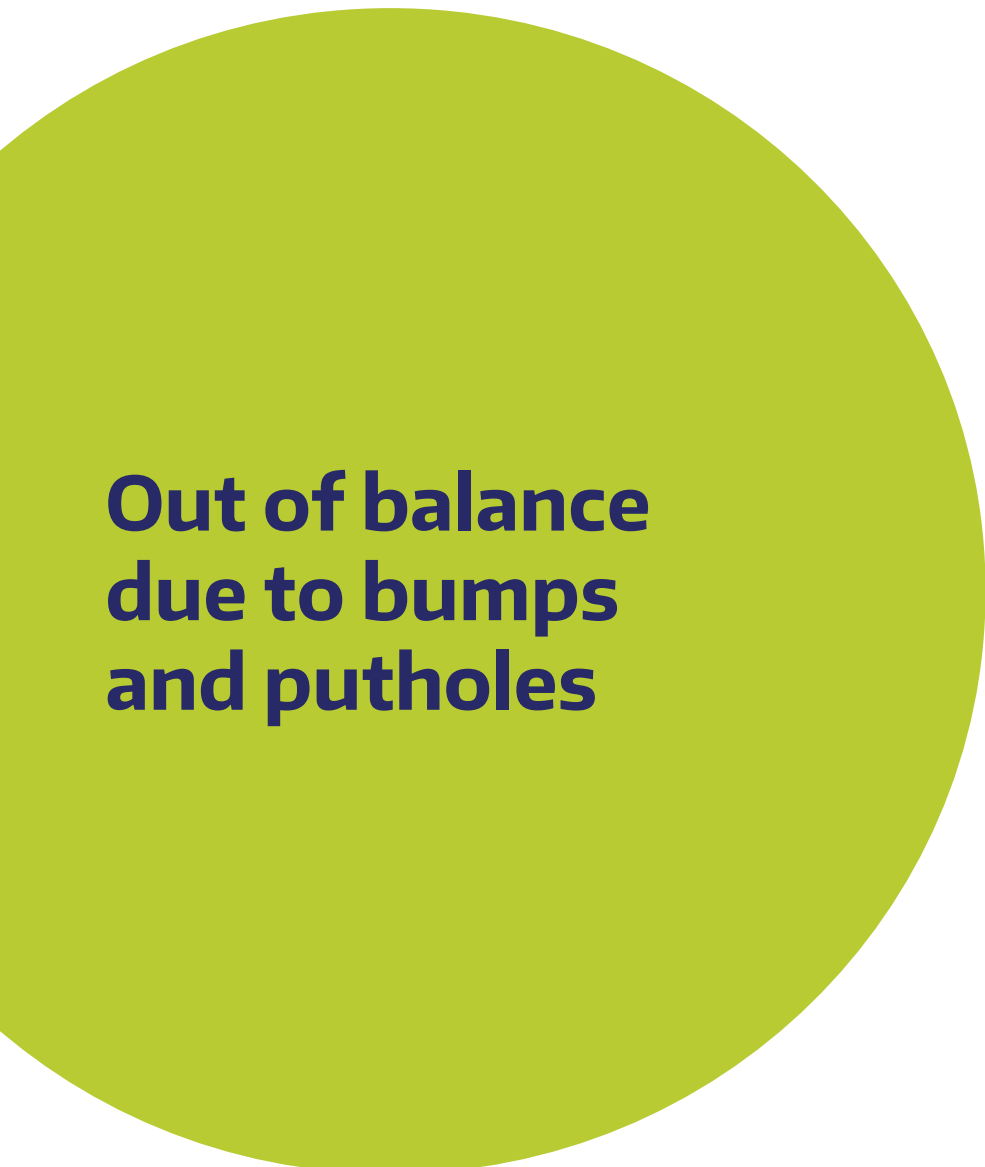
50% reduction



Crashed caused by bumps, potholes and objects on the road

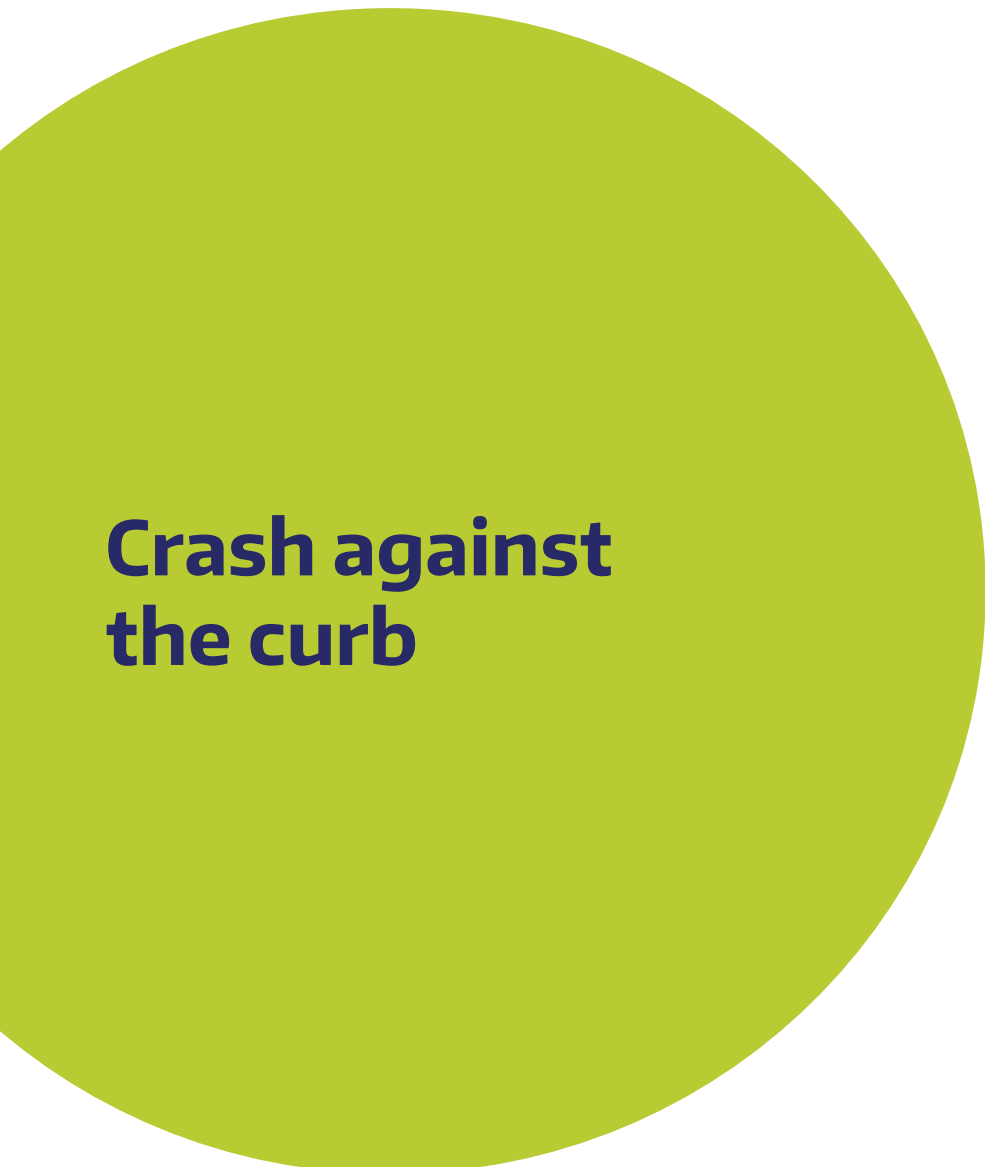
75% reduction





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

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



**Crash against
the curb**

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



**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**



**Crash into
bollard or road
narrowings**

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

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



INSTITUTE FOR
ROAD SAFETY RESEARCH

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