INSTITUTE FOR
ROAD SAFETY RESEARCH

Overview of the problem of single-bicycle crashes

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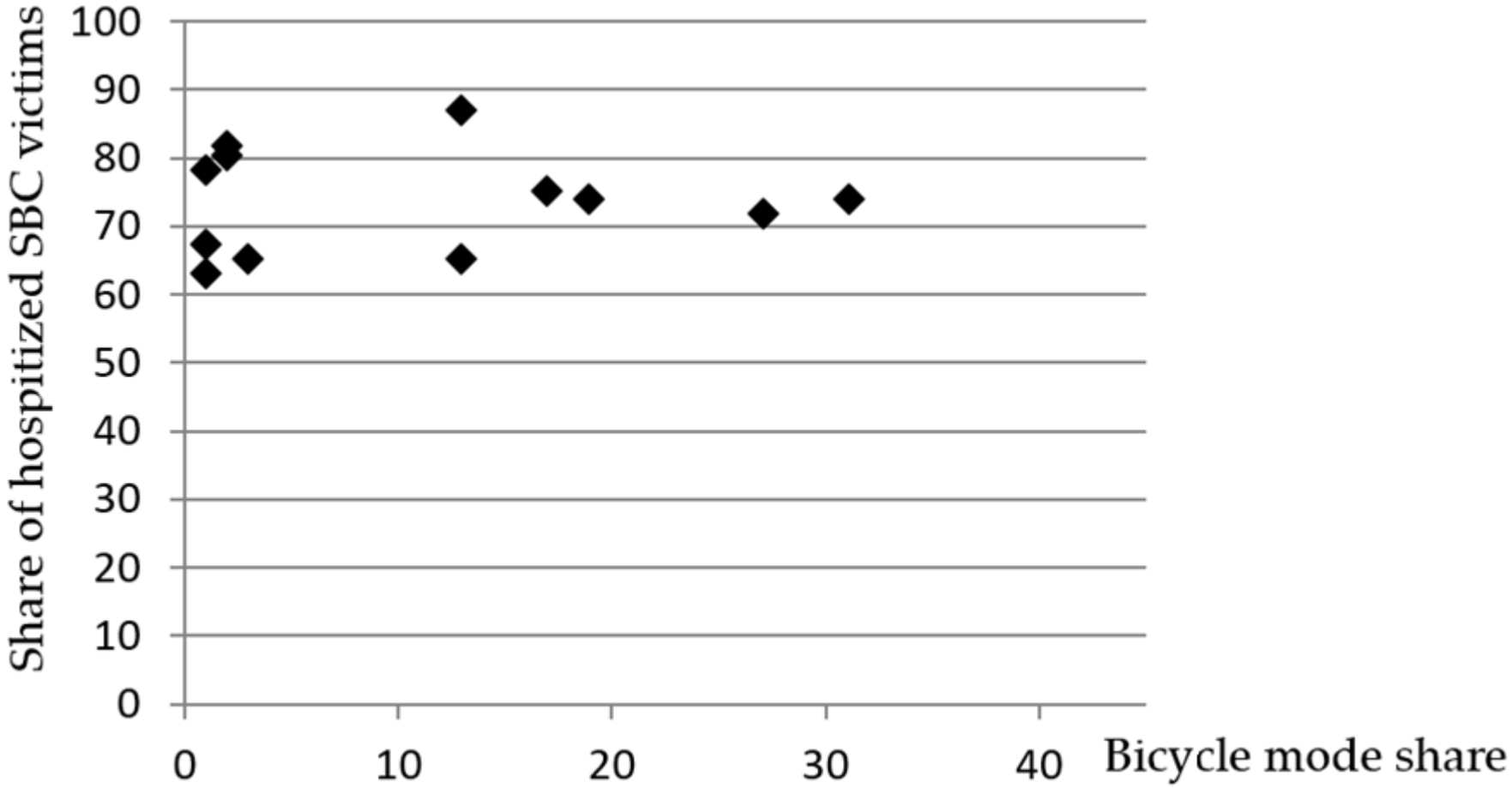
Content

- Size of the problem
- Statistics
- Crash typology

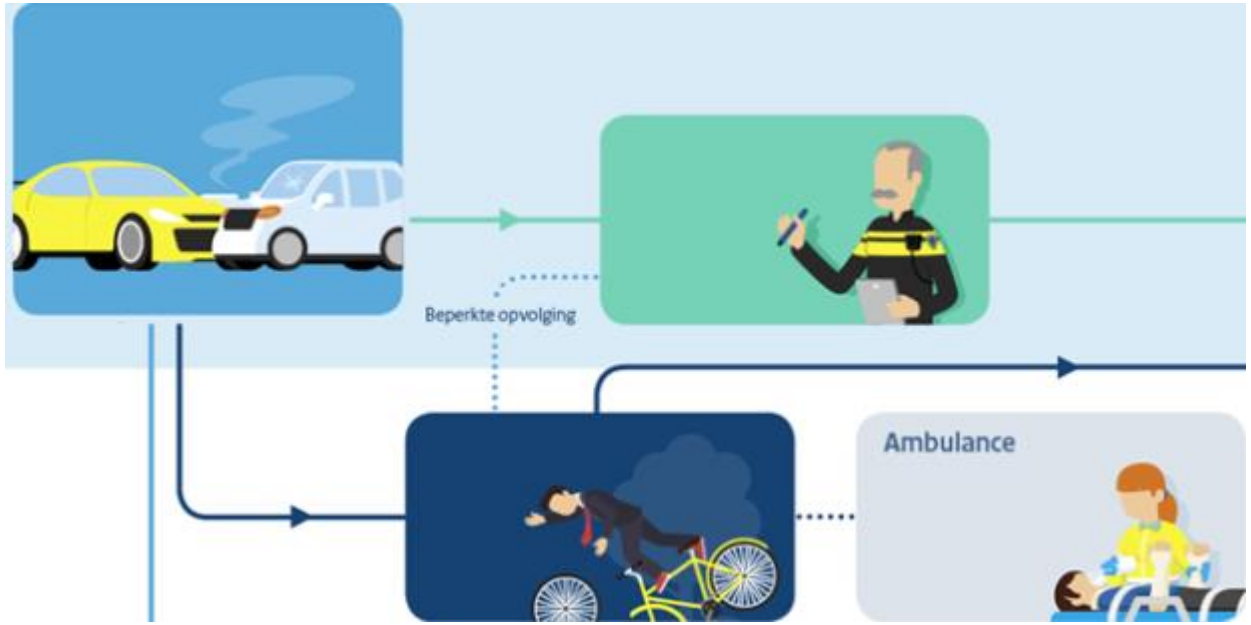
The size of the problem: share of single-bicycle crash victims among hospitalised cyclists in 12 countries



Source: Schepers, P., 2013. A Safer Road Environment for Cyclists. Delft: Delft University of Technology.
Schepers, P., Agerholm, N., Amoros, E., Benington, R., Bjørnskau, T., Dhondt, S., ... & Niska, A. (2015). An international review of the frequency of single-bicycle crashes (SBCs) and their relation to bicycle modal share. Injury prevention, 21(e1), e138-e143.

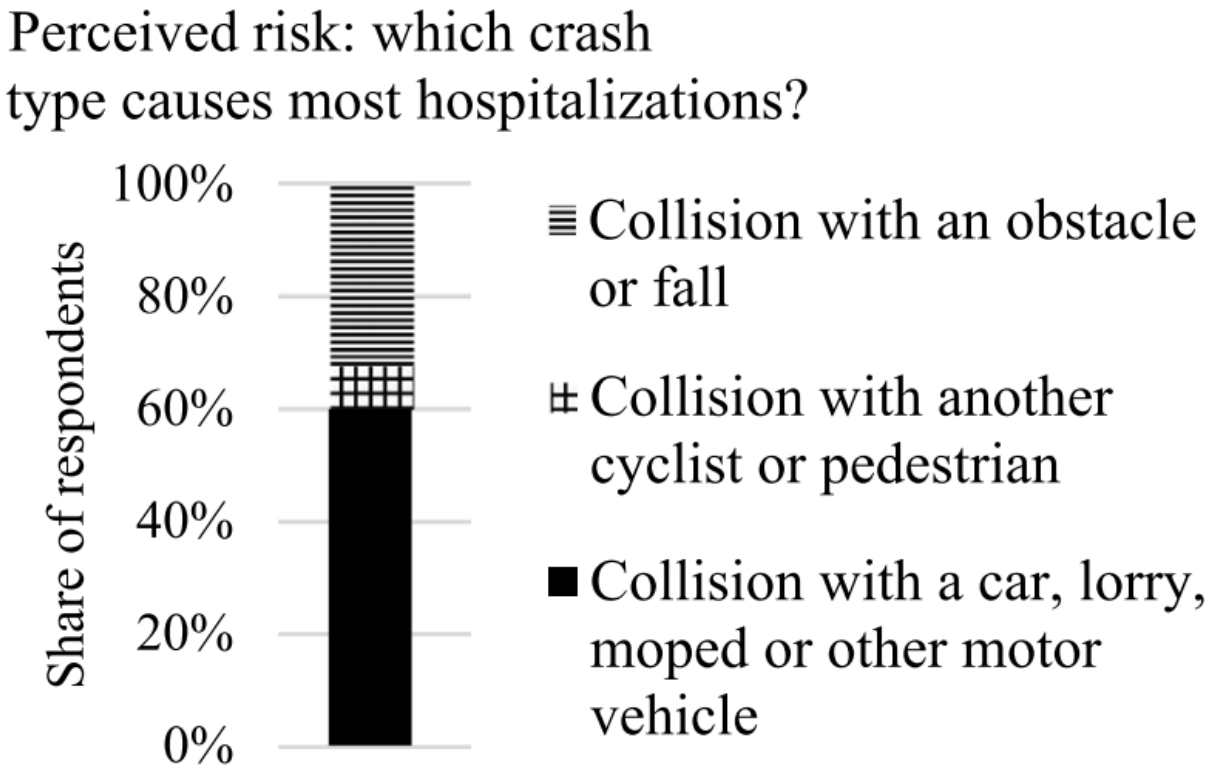
Single-bicycle crashes in statistics and research

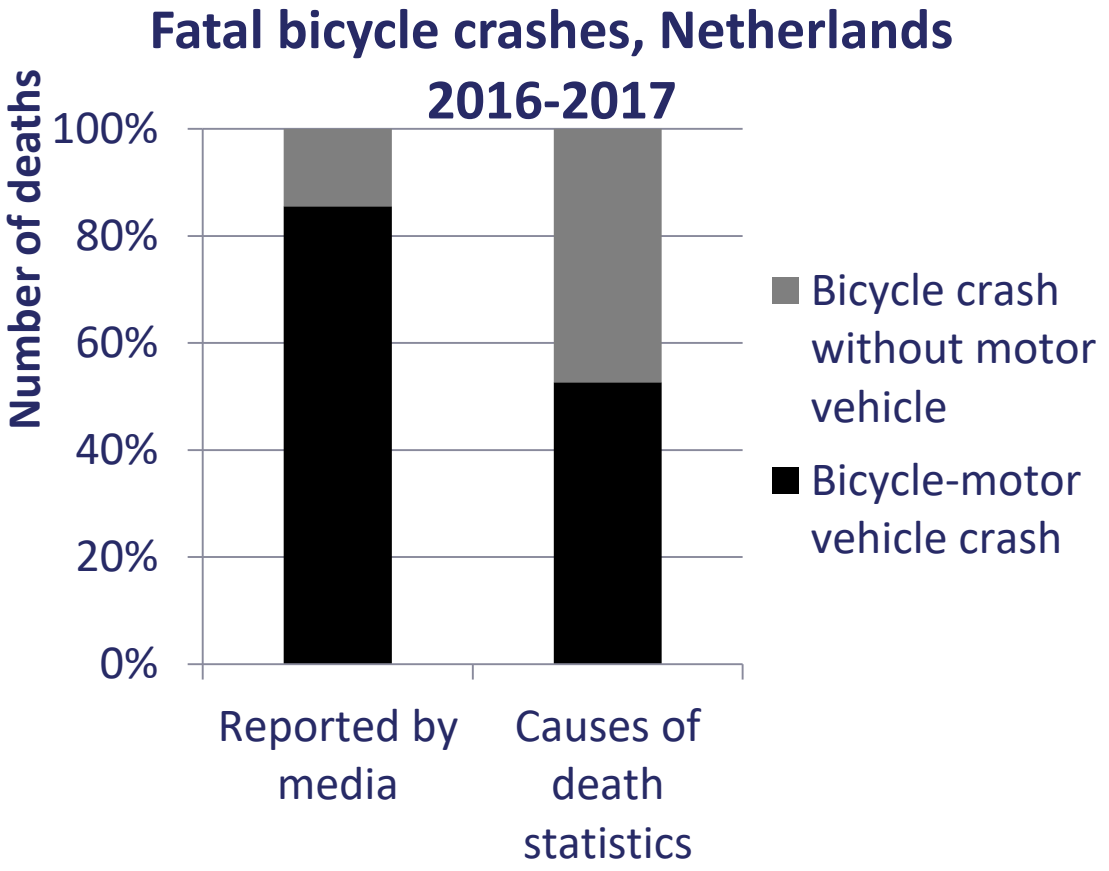
- Police recorded crash data has been common for decades
- Severe single-bicycle crashes hardly recorded
- Medical registrations such as hospital data show the size of the problem



Source:
https://www.rijkswaterstaat.nl/wegen/wegbeheer/onderzoek/verkeersveiligheid-en-ongevallencijfers/bronnen-voor-ongevallencijfers/index.aspx

Problem underestimated by the public





Schepers, P., de Geus, B., van Cauwenberg, J., Ampe, T., & Engbers, C. (2020). The perception of bicycle crashes with and without motor vehicles: which crash types do older and middle-aged cyclists fear most? *Transportation research part F: traffic psychology and behaviour*, *71*, 157-167.

Types of single-bicycle crashes: study among victims treated at Dutch Emergency Departments

- Four partly overlapping groups:
  1. Infrastructure-related crashes
  2. Cyclist-related crashes
  3. Bicycle malfunction, e.g. saddle breaks off
  4. Other, e.g. external force such as wind or dog hits front wheel
- Group 1 is the largest group (about half of all single-bicycle crashes) while the last two are small (5%; 12%)

Source: Schepers, P., 2013. A Safer Road Environment for Cyclists. Delft: Delft University of Technology.
The explorative part of the paper focused on crash types: Schepers, J.P., Klein Wolt, K., 2012. Cycling Research International, 2: 119-135.

Infrastructure related

- skidding due to a slippery road surface (18%)
- loss of control due to an uneven road-surface or loose object on the road (7%)

Infrastructure related

- skidding due to a slippery road surface (18%)
- loss of control due to an uneven road-surface or loose object on the road (7%)
- collisions with obstacles on the road (12%)
- riding off the road (21%)

Cyclist related

- Loss of control at low speed, especially while mounting or dismounting (16%)
- Loss of control due to forces on the front wheel or handlebars, e.g. baggage (8%)
- Loss of control due to riding behaviour:
  - abrupt steering manoeuvres, e.g. a shock reaction or abrupt avoidance manoeuvre (13%)
  - braking mistakes, e.g. skidding of a wheel or flying over the handlebars after having braked too hard (6%)
  - Stunting, e.g. doing a wheelie (2%)

Dubbeldam, R., Baten, C., Buurke, J. H., & Rietman, J. S. (2017). SOFIE, a bicycle that supports older cyclists?. *Accident analysis & prevention*, *105*, 117-123.

Thank you!

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