

The background of the slide is a photograph of a winding asphalt road in a mountainous region. The road curves to the right and is bordered by a metal guardrail. In the distance, a large waterfall cascades down a rocky cliff face. The foreground shows green grass and trees on the left side of the road.

# Improving the safety of infrastructure for PTWs

Martin Winkelbauer | 19.06.2024, Brussels | PIN Conference

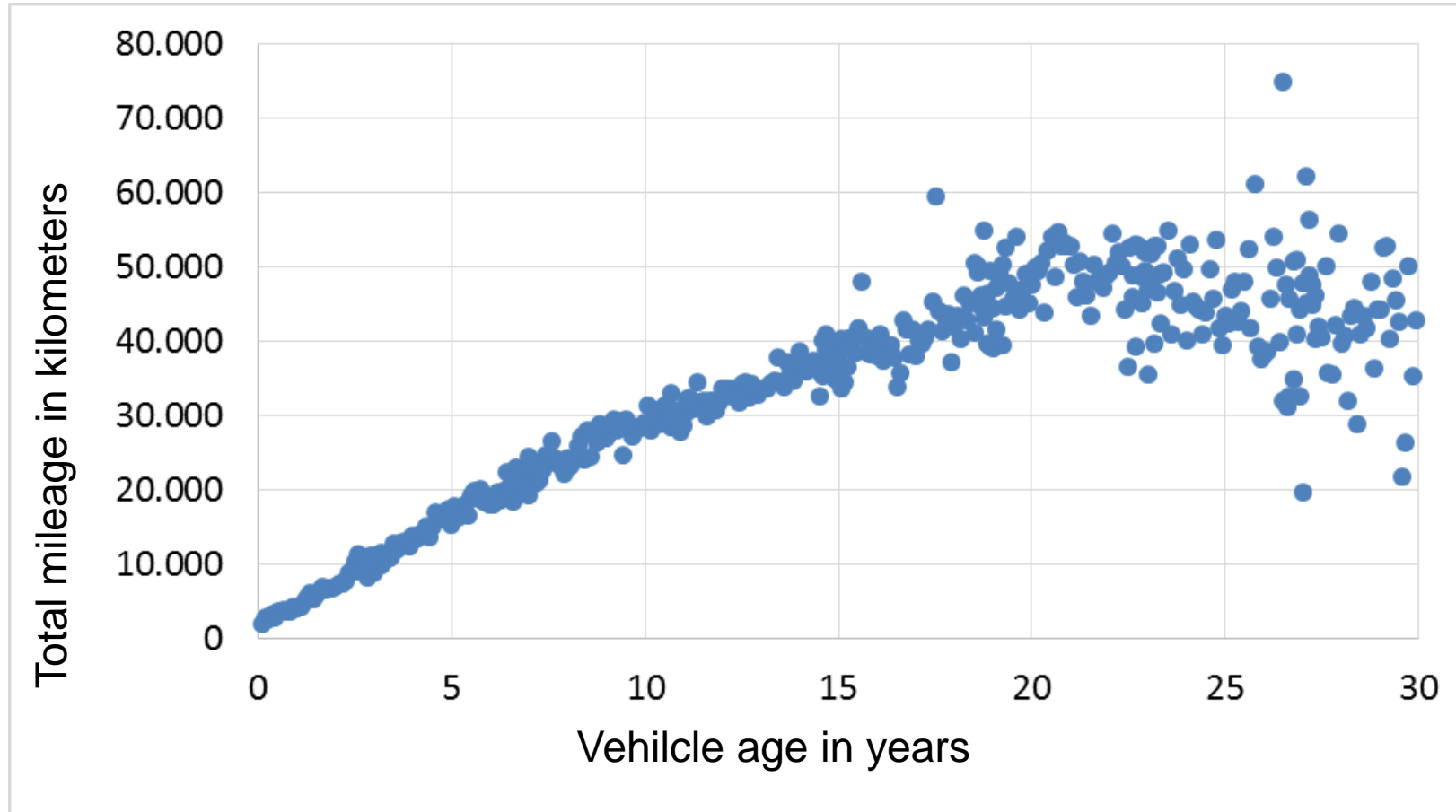


# Vehicle safety: Rider assistance – connected vehicles

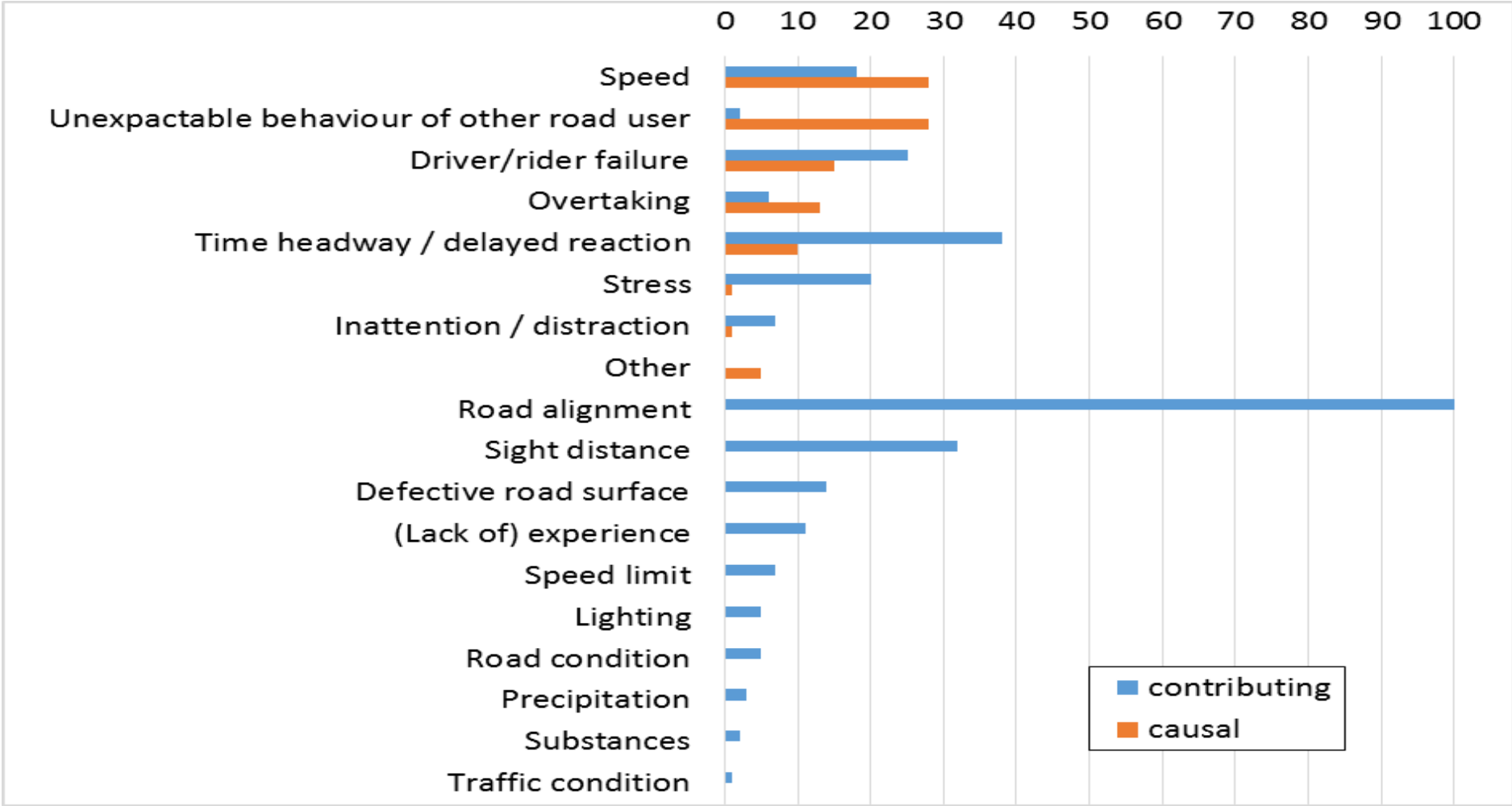
- **ABS**
- **ISA, LDW, ACC**
- **Emergency breaking**
- **Intersection Movement Assist (IMA)**
- **Left Turn Assist (LTA)**
- **Stationary Vehicle Warning (SVW)**
- **Electronic Emergency Brake Light (EEBL)**
- **PTW digital conspicuity**
- **<https://www.cmc-info.net/>**



# Lifetime of a motorcylce ... takes >15 years



# Crash causes (according to KFV's in-depth study)



Source: CEDATU, Bearb.: TU Graz (VSI), KFV

# Forgiving roadsides



# Forgiving roadsides



# Infrastructure: predictable horizontal alignment

Source: <https://www.google.at/maps/@48.2756773,16.1103479,199m/data=!3m1!1e3?entry=ttu>





# Infrastructure: predictable friction

Source: <https://www.google.at/maps/@47.1143617,10.9392779,3a,75y,314.59h,83.12t/data=!3m7!1e1!3m5!1sAF1QipN2OzzkHb4-RtBuKwuxYhblk3DmKUDpfzuz9HLz!2e10!3e11!7i7680!8i3840>

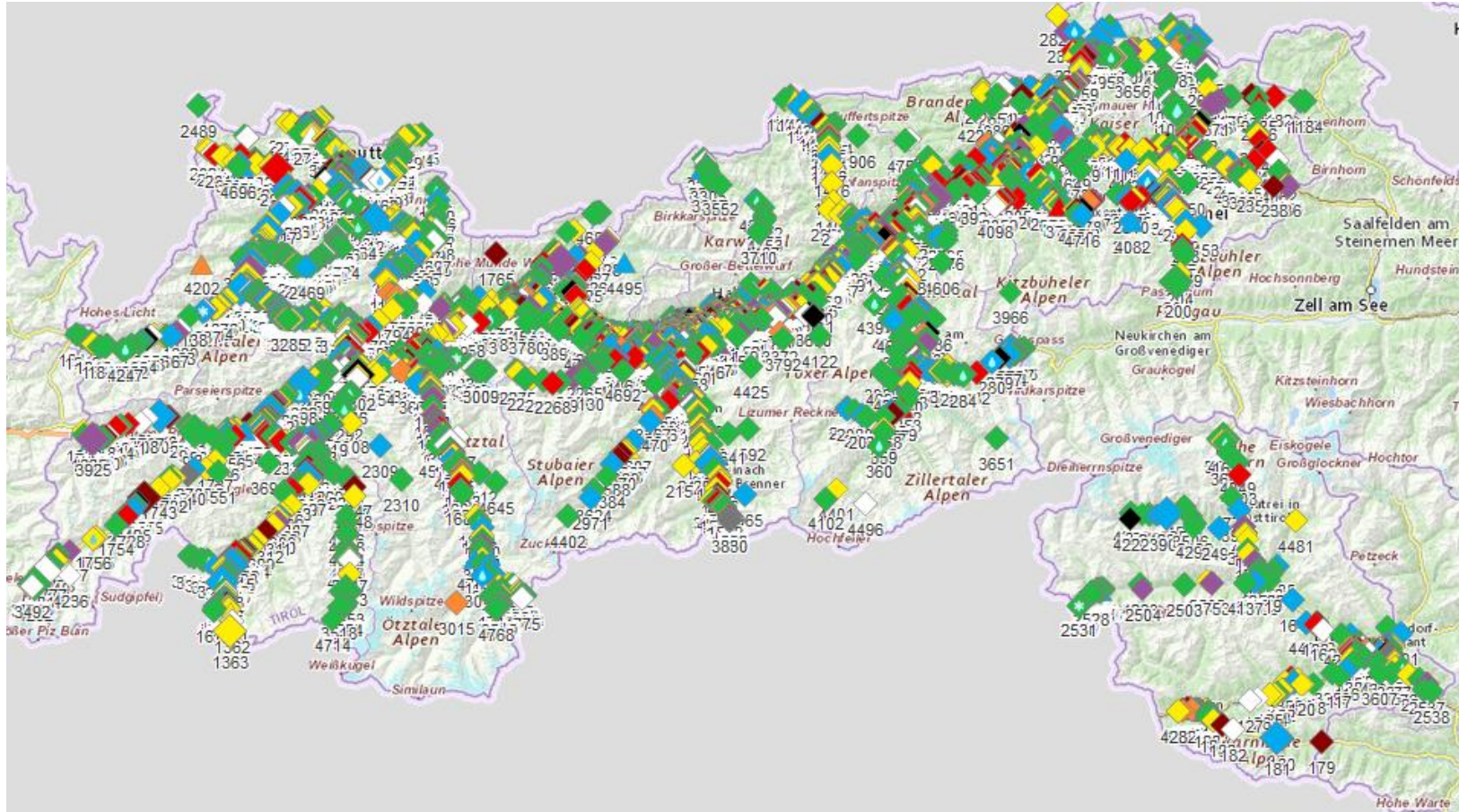


# Infrastructure: predictable friction

Source: Austrian driving license test



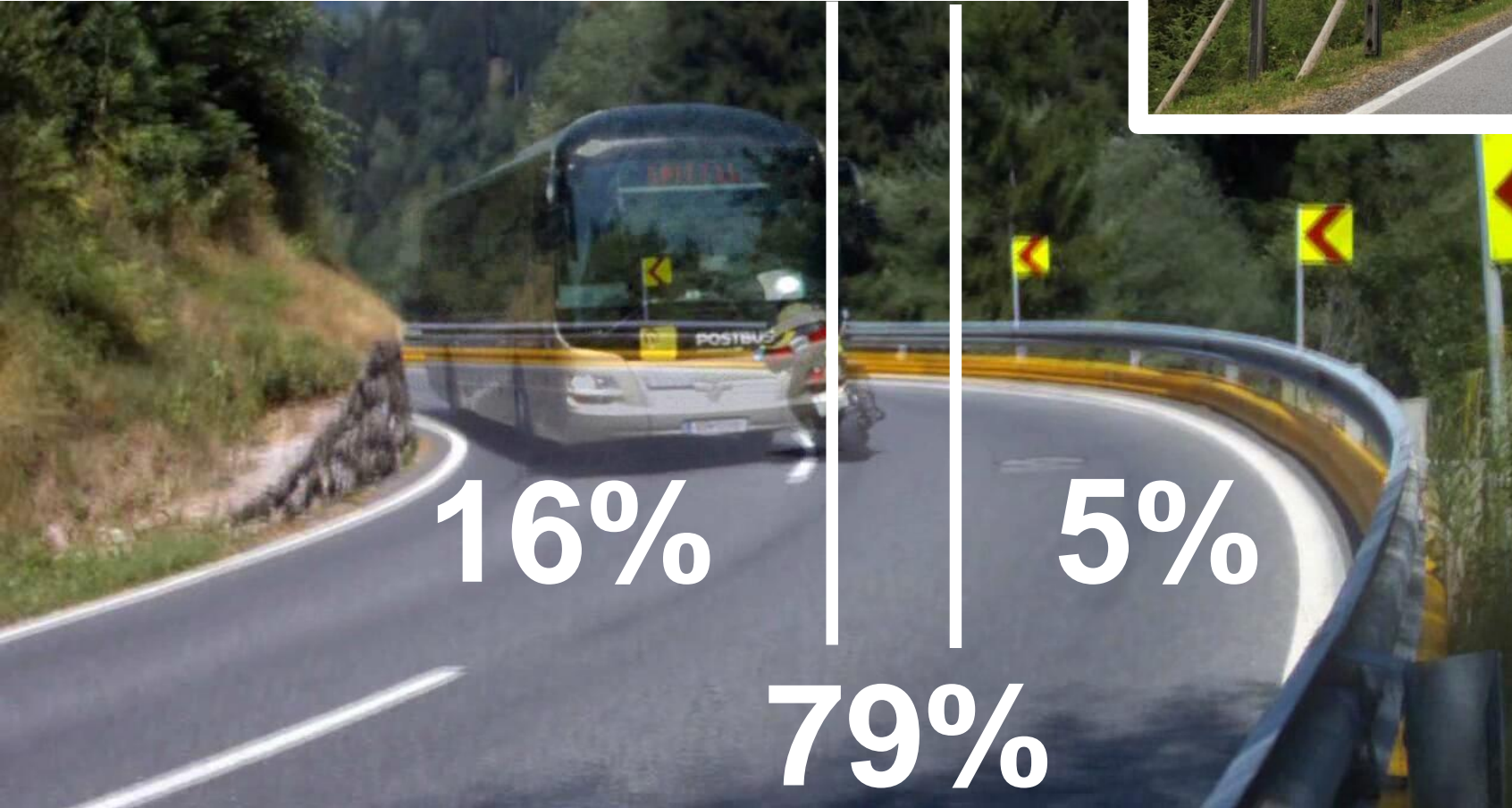
# Crash analysis beyond High Risk Site Management



# Know your roads: Train RSI/RSA auditors on PTW issues



# Know your target group!



# Riders don't like travelling over road markings



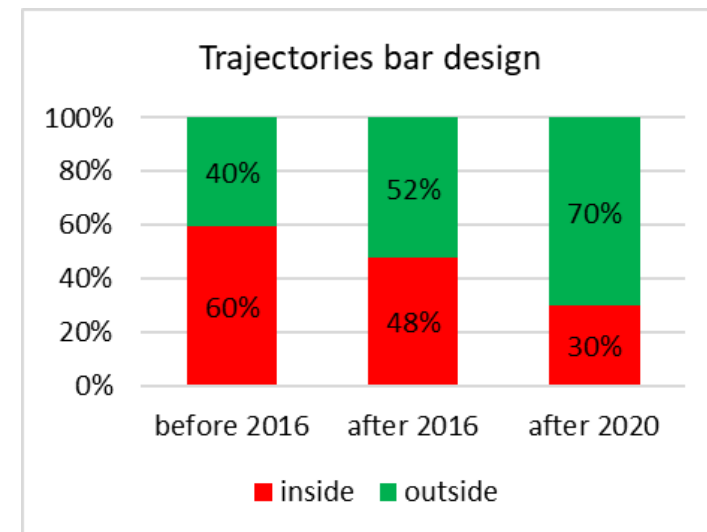
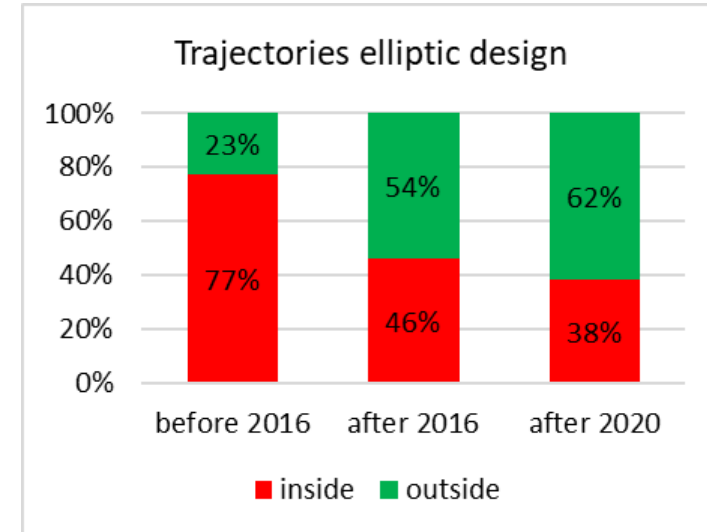
# Paint the road, where you don't want them to go



# Apply best practices

## Evaluate new ideas

- **19 Curves**
- **Before (2012-6/2019)**
  - 6,3 slight injuries p.a.
  - 6,4 severe injuries p.a.
  - 0,57 fatalities p.a.
- **After (7/2019-2021)**
  - 2 slight injuries
  - 2 severe injuries
  - Control for corona pandemic
- **80% fewer crashes**





# Urban safety: Faixa Azul, Sao Paolo

Source: Valtair Ferreira Valadao, IMRSC Zaragoza



# Infrastructure

- Know your roads!
- Know your target group!
- Predictable alignment
- Predictable friction
- Forgiving roadsides
- Apply best practices!
- Evaluate new ideas!
- Infrastructure Guidelines for motorcycle-safe road design
- Support application!

