Glare
from a road safety perspective

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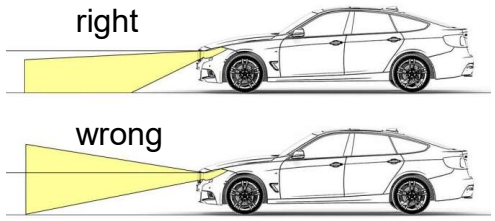
1. Causes of Glare

Glare from

- the sun,
- reflective surfaces,
- vehicle lighting

1. Causes of Glare

- Low sun
- Luminance
- Increasing luminosity (also for bicycles)
- Incorrectly adjusted headlights
- Soiling on headlights and windscreen
- High beam, but also low beam and auxiliary rear light
- Increased sensitivity to glare with age



2. Impact on road safety

- Increased accident risk:
  - Sun glare is the cause of approx. 2500 accidents with personal injury every year = 2/3 of all weather-related accidents [source: destatis, 2023]
  - Reduced reaction time
- Driving ‘blind’ up to temporary blindness
- Impaired visibility of road signs, traffic lights, obstacles and other road users
- Risk of permanent visual problems

3. Specific challenges for different road users

Car drivers:

- 90 % feel dazzled in road traffic [Source: Survey by the ADAC]

Cyclists:

- Particularly impaired, as they have no suitable protective measures and are less likely to be dimmed for them out of town

Pedestrians:

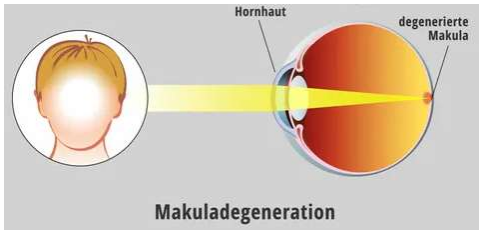
- Glare from headlights can impair visibility of pavements, crossings and potential hazards

4. Medical effects of glare

The extent and duration of glare depend on several factors. These include:

- Luminance and extent of the light source,
- the projection location on the retina
- the ambient brightness,
- the state of adaptation of the eye,
- but also individual factors such as the age of the person.

4. Medical effects of glare



- If the irradiance exceeds certain values, light can damage the eyes in particular. This applies in particular to the high-energy, blue part of the visible spectrum
- In what is known as ‘physiological glare’, the perception of visual information is actually measurably reduced. In what is known as ‘psychological glare’, light is perceived as unpleasantly bright or distracting. This form in particular is characterised to a high degree by subjective perception.
- Glare restricts vision for a certain period of time. Even if this effect is temporary and does not cause eye damage: The risk of accidents can be significantly increased.

5. Measures to reduce glare

Recommendations to policy makers:

- *Legal limitation of luminance*
- The legal requirements must be adapted to ensure that all oncoming, relevant road users are recognised and masked by ‘glare-free high beam’

Recommendation to vehicle manufacturers and suppliers:

- Vehicle manufacturers and/or suppliers should endeavour to improve the effectiveness of headlight cleaning systems.
- Ensure correct adjustment of the headlights on delivery
- When developing new headlights, headlight manufacturers should therefore take care to reduce or filter harmful light components (e.g. blue light components).

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5. Measures to reduce glare

Recommendations to drivers:

- Clean headlights and windscreen regularly
- Adjust headlights correctly
- Use sunglasses if necessary
- Keep your distance and drive with foresight
- Adapt your speed to the conditions
- Sit in an upright position
- Make sure you switch off when there is oncoming traffic (including oncoming cyclists and pedestrians)
    - ➢ Don't blindly trust the automatic low beam

THANK YOU!

Your cantact person:

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