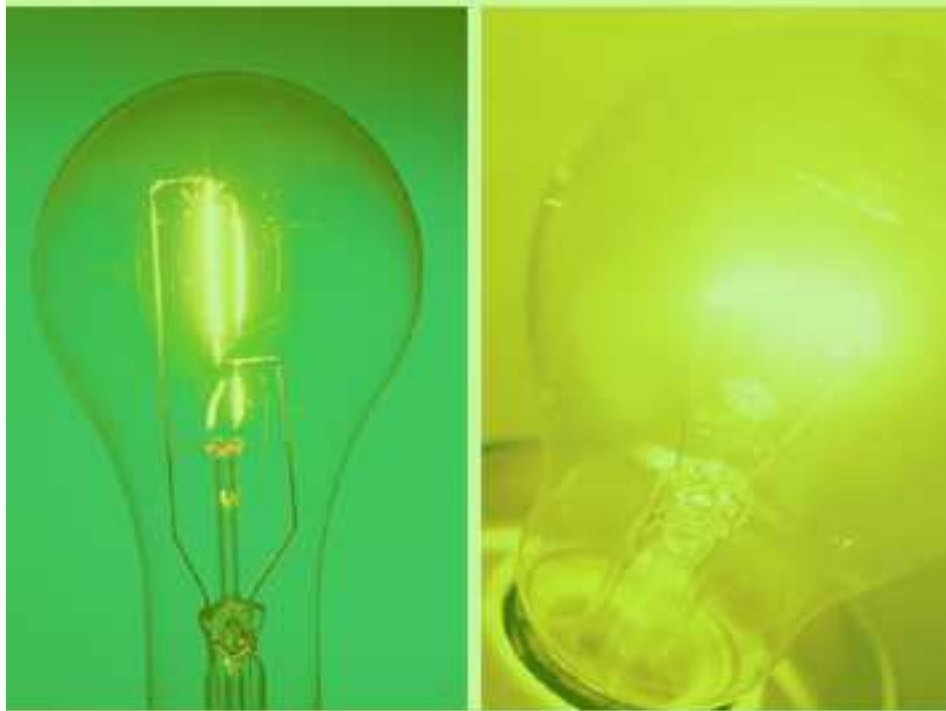


# Risks of elderly lorry-drivers and recognition these risks during police check-ups and accident examination



**TISPOL**

**Operational group meeting  
Münster June 2005**

**Prof. Dr. Dieter Müller  
Police Academy of Saxony**

# Introduction



Prof. Dr. Dieter Müller

- 01.04.1959 born in the near of Hannover, married, five children, Bautzen, Saxony
- 1978 – 1981 police officer in lower saxony
- 1981 – 1990 studies, law and theology
- 1991 – 1994 practise as judge, prosecutor, lawyer
- since 1995 lecturer at police academy Saxony
- Member of Christian Police Association
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# Outline

1. Elderly (lorry-) drivers tasks
2. Elderly (lorry-) drivers risks
3. Eyes and visual perception
4. Ears and hearing of elderly drivers
5. Delayed reaction of elderly drivers
6. Check the abilities of elderly drivers
7. Recognition of deficiencies during accident examination
8. Conclusions



## **My job today, is ...**

- to highlight some main problem areas of elderly lorry-drivers
- and
- to propose some techniques in recognising deficiencies of drivers abilities

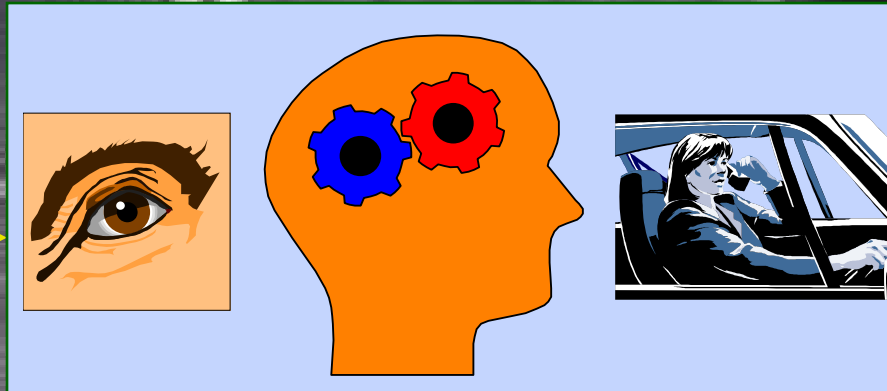
# Lorry-Drivers tasks

## The Driving Process

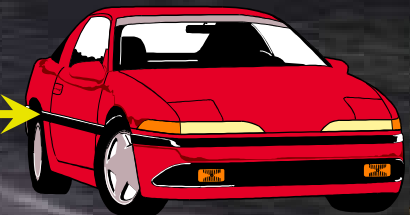
Driving task  
Road environment



Perceive/Recognize - Decide - Act



Vehicle  
respons



# Lorry drivers risks

Analysis of car-truck crashes in 2000 (AAA Foundation)

## Identifying Unsafe Driver Actions that Lead to Fatal Car-Truck Crashes



*Prepared by*

Lidia P. Kostyniuk, Fredrick M. Streff,  
and Jennifer Zakrajsek

University of Michigan  
Transportation Research Institute

*Prepared for*

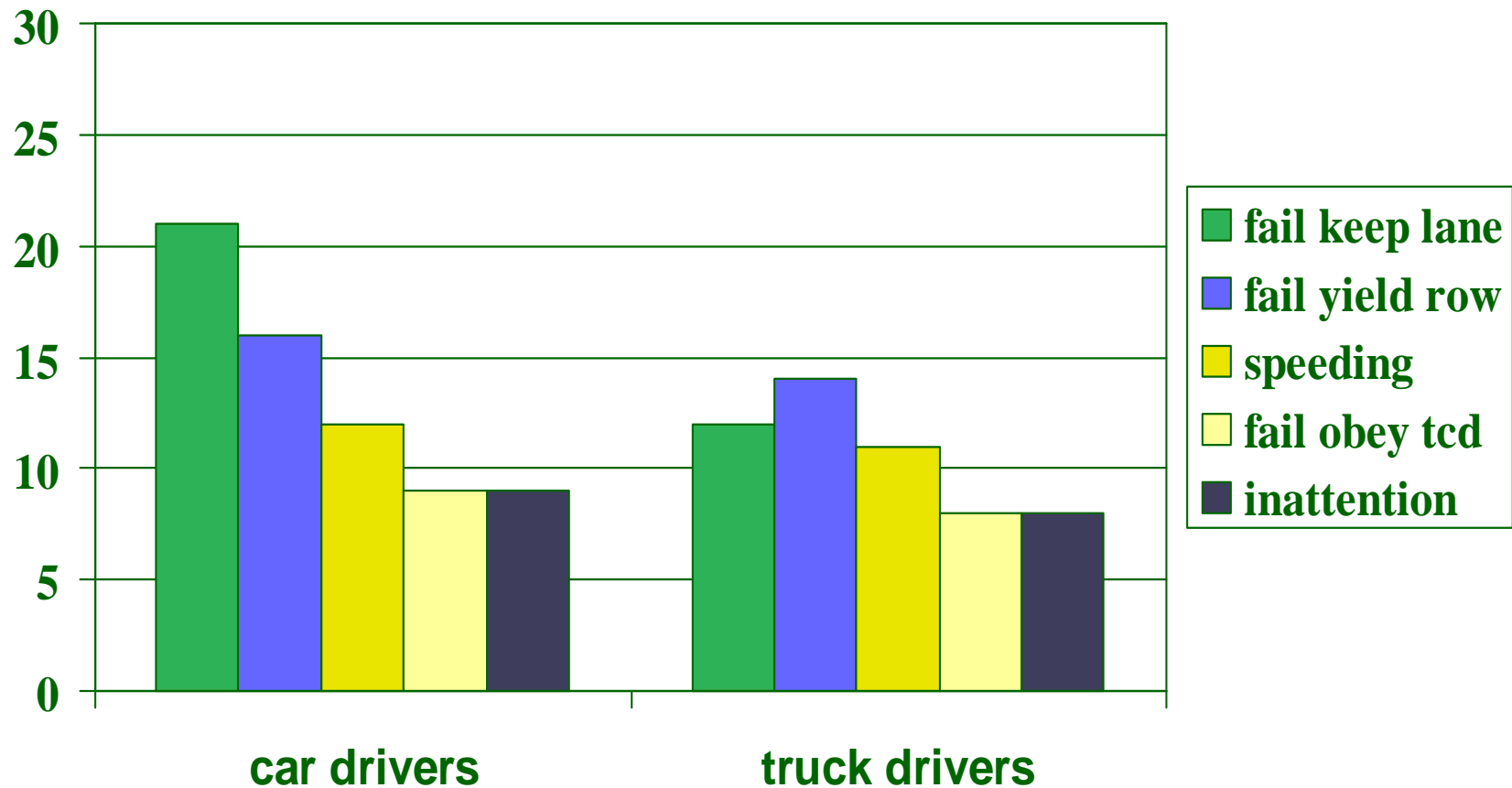
**AAA Foundation for Traffic Safety**  
1440 New York Avenue, N.W., Suite 201  
Washington, DC 20005

[www.aaafoundation.org](http://www.aaafoundation.org)

**Published  
April 2002**

# Lorry drivers risks

Analysis of car-truck crashes in 2000 (AAA Foundation)



100% = 13,393 for car drivers  
= 4,474 for truck drivers



# Lorry drivers risks

- Failing to keep in lane (12%)
- Failing to yield right-of way (14%)
- Excessive speed (11%)
- Failing to obey traffic control devices and laws (8%)
- Inattention (6%)





## Lorry drivers risks

### **Car drivers are more likely to commit unsafe driving actions than truck drivers !**

- Of all unsafe driving actions identified, 75% were assigned to car drivers and only 25% to truck drivers
- 80% of car drivers in the sample were assigned at least 1 UDA compared to 27% of truck drivers



# Lorry drivers risks

## Results from detailed review

- Younger car drivers - alcohol, speed
- **Older car drivers** - failure to yield right-of-way, improper turns, intersection problems
- Younger truck drivers – more likely than older alcohol, speed, drugs (number of cases small)



## Lorry drivers risks

**And the cause of unsafe driving actions and crashes of elderly drivers ?**



- is sometimes ...
- fail to visual perception
- fail to hearing perception
- delayed reaction
- falling asleep at the wheel

**But these causes often remain unrecognized !**



# Eyes and visual perception

**Vision and perceptual deficiencies  
as a risk factor in traffic safety**

**70 % of all necessary information  
for our driving tasks we get  
through our eyes !!!**



# Eyes and visual perception


## **Vision and perceptual deficiencies as a risk factor in traffic safety**

**Vision 100 %**



**Vision deficient**





# Eyes and visual perception

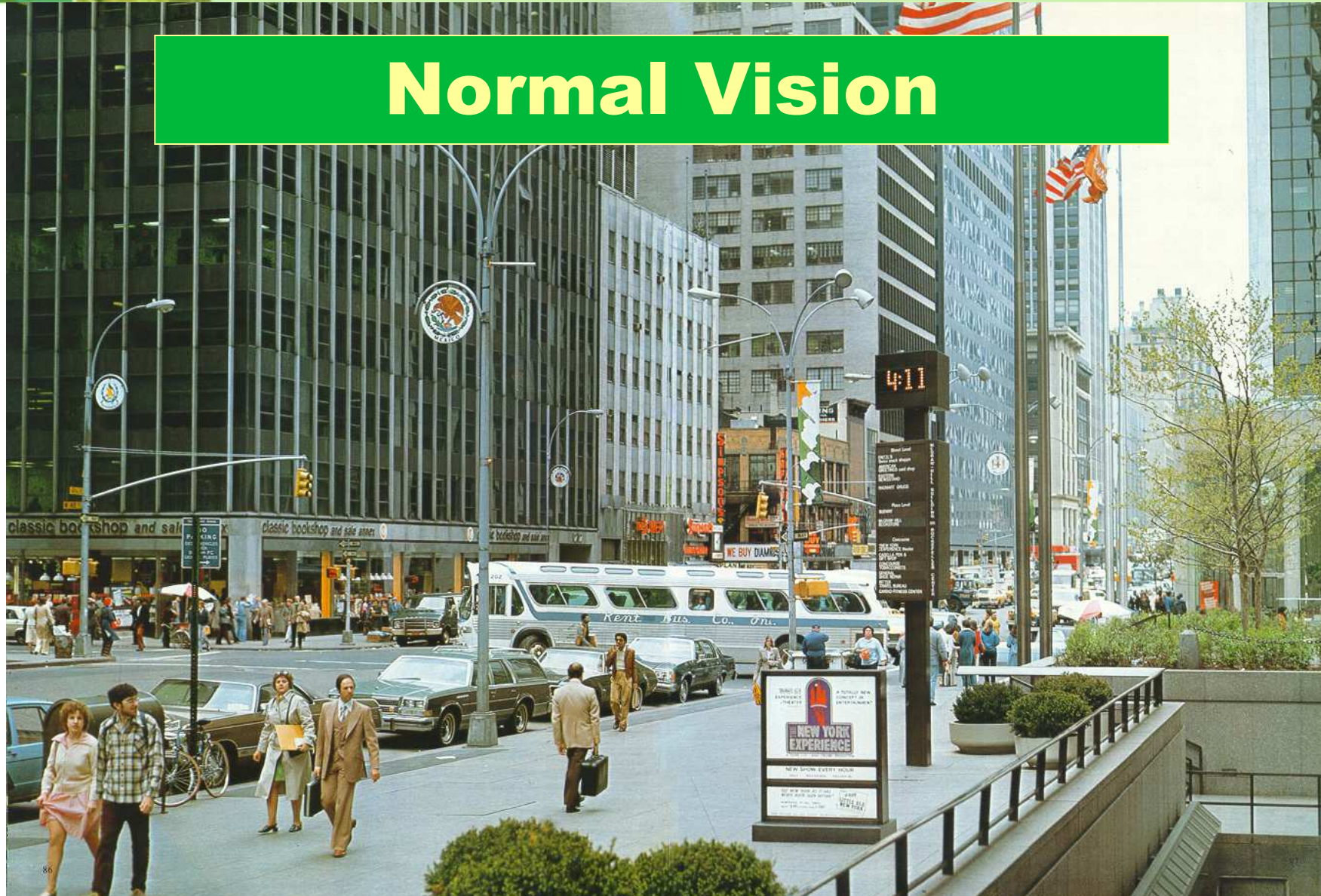
## Visual field defect





# Eyes and visual perception

## Normal Vision

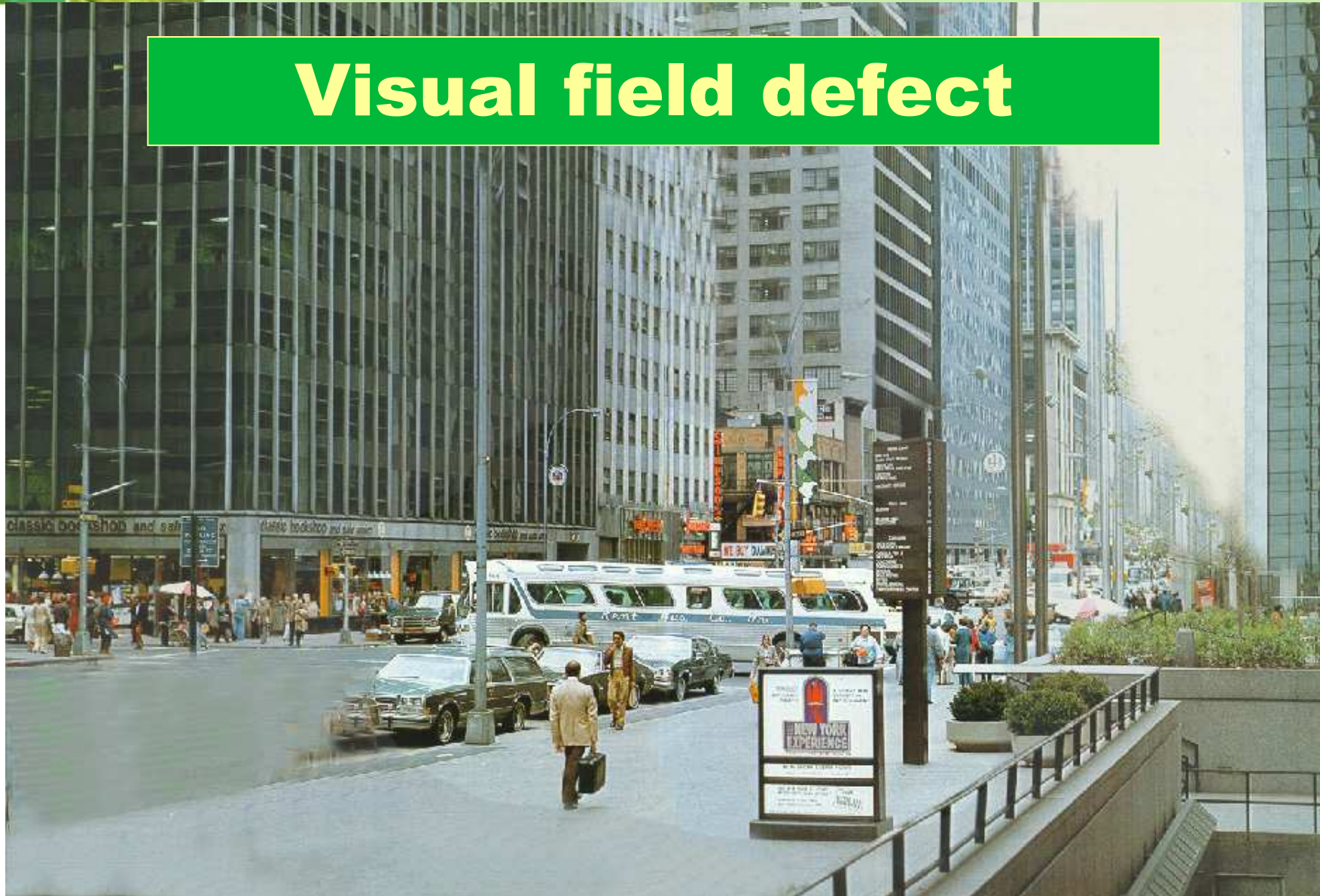






# Eyes and visual perception

## Visual field defect





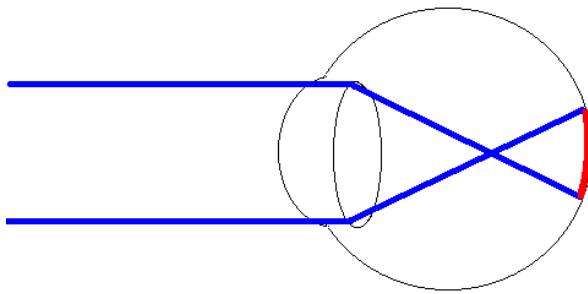


# Eyes and visual perception

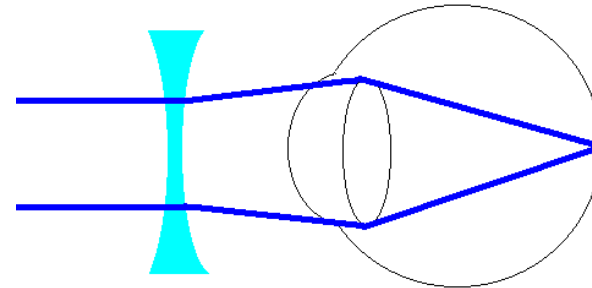
## Short sightedness (Myiopia)

**Distance vision blurry, near usually OK.**

**Short-sighted  
focus**



**Short-sighted  
correction**



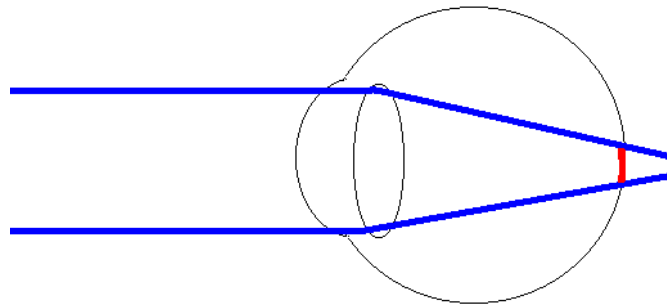


# Eyes and visual perception

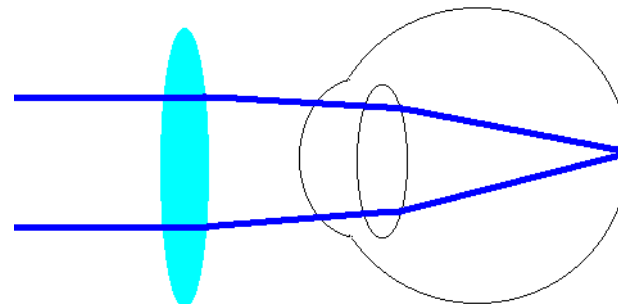
## Long sightedness (Hyperopia)

Difficulty seeing clearly and comfortably up close.

**Long-sighted  
focus**



**Long-sighted  
correction**



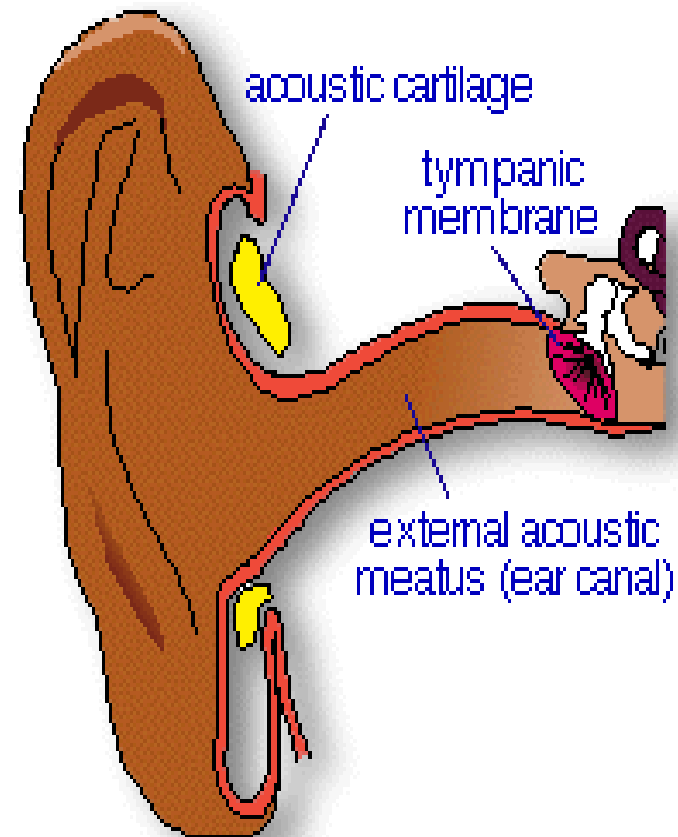
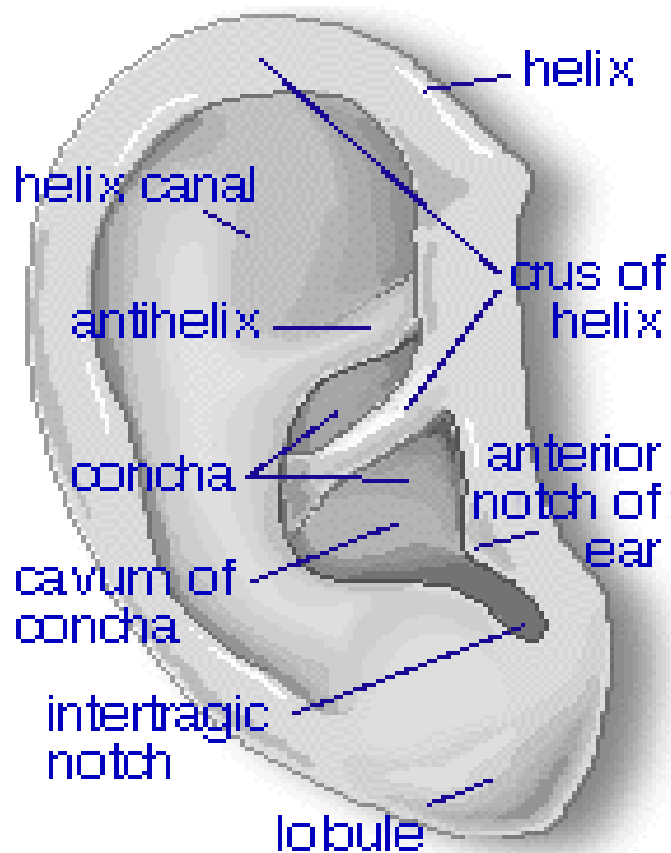


# Ear and hearing

## **Ear problems an the history of present illness**

- hearing loss
- ototoxic drugs
- exposure to noise
- family history
- onset/duration/fluctuations
- presence of purulent drainage

# Ears and hearing





# Police tasks

## 1. Vehicles

fit for purpose?  
properly maintained?



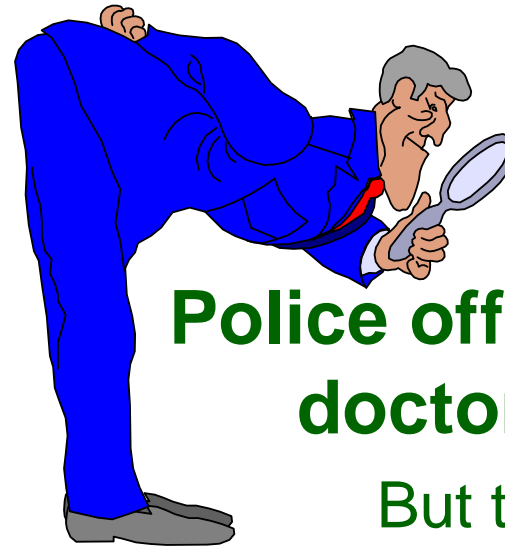
## 2. Drivers

age, experience?  
fitness/eyesight/stress?  
crashes/points?  
attitudes/competence?





# Check the driving ability



**Police officers are no doctors!**

But they have open eyes to see some striking differences in the behaviour of lorry-drivers during police check-ups



# Check the driving ability



## Drivers abilities

Age?

Fitness?

Eyesight?

Stress?

Sense of hearing?

Reaction?



# Check the driving ability

## Vision tests



### Depth vision:

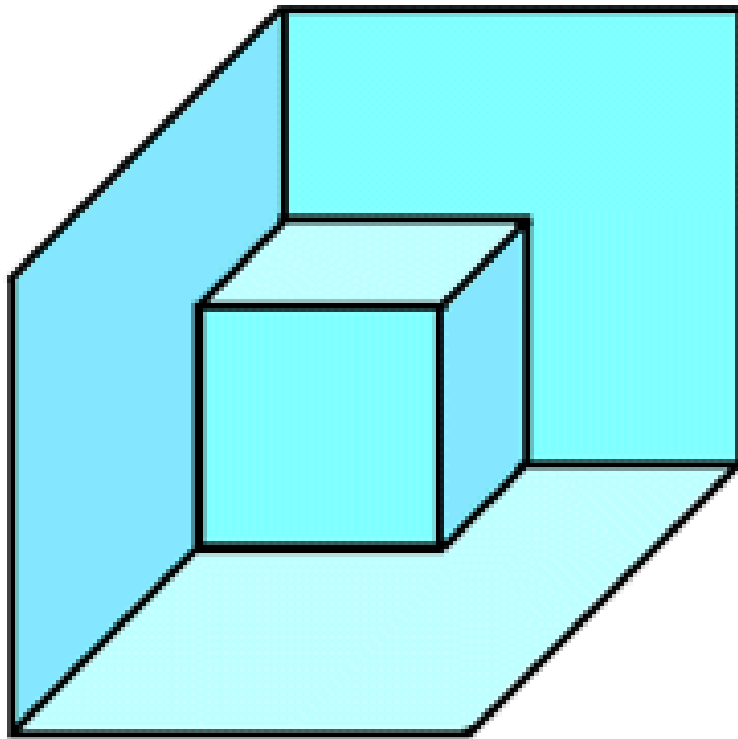
- Perceiving the distance straight ahead of the eyes





# Check the driving ability

## Vision tests



### Stereoscopic vision/ Binocular vision:

- Three-dimensional vision produced by the fusion of two slightly different views of a scene received from each eye
- Very important for depth perception.

# Accident examination

## Basic causes for accidents



### Direct cause

- For example: Failing to yield right-of way.

### Indirect cause

- For example: Failing to perceive the distance between the two involved cars.



# Accident examination

## Eastbound on Interstate 20 near Tallulah, Louisiana



SOURCE: LSP



# Accident examination

## Eastbound on Interstate 20 near Tallulah, Louisiana

- Motorcoach Driver 66-year-old male without medical certificate
  - Driver seriously injured
  - 8 passengers fatally injured
  - 6 passengers seriously injured
- Issue
  - Driver fatigue?



# Accident examination

Be prepared to ...

- Develop contingency plans prior to the accident.
- Designate an investigator
  - who should only be responsible for investigating accidents with the suspicion of deficient drivers abilities.
  - who should have a good working knowledge of operating procedures.



## Try yourself ...

Look at the chart and say the COLOUR not the word

<b>YELLOW</b>	<b>BLUE</b>	<b>ORANGE</b>
<b>BLACK</b>	<b>RED</b>	<b>GREEN</b>
<b>PURPLE</b>	<b>YELLOW</b>	<b>RED</b>
<b>ORANGE</b>	<b>GREEN</b>	<b>BLACK</b>
<b>BLUE</b>	<b>RED</b>	<b>PURPLE</b>
<b>GREEN</b>	<b>BLUE</b>	<b>ORANGE</b>

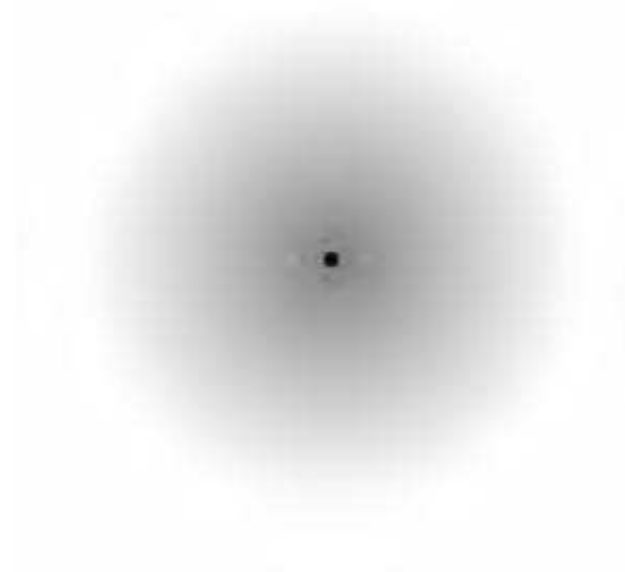
### **Left – Right Conflict**

**Your right brain tries to say the colour but your left brain insists on reading the word.**



## Try yourself ...

Keep staring at the black dot. After a while the gray haze around it will appear to shrink.







## Thank you to ...

***Gunnar Deinboll Jenssen***, SINTEF Roads and  
Transport, Norway

**AAA Foundation** for traffic safety, Washington DC

***Roger Bibbings***, ROSPA Royal Society of the  
prevention of accidents

Optometrists Association Australia

***David M. Barclay***, Temple University School of medicine

**NTSB** National Transportation Safety Board, USA

Pictures partly from the movie "Convoi" with Kris  
Kristofferson





Sharing the road safely !

**Thank you dear colleagues for your  
attention!  
You are a perfect audience!**

