

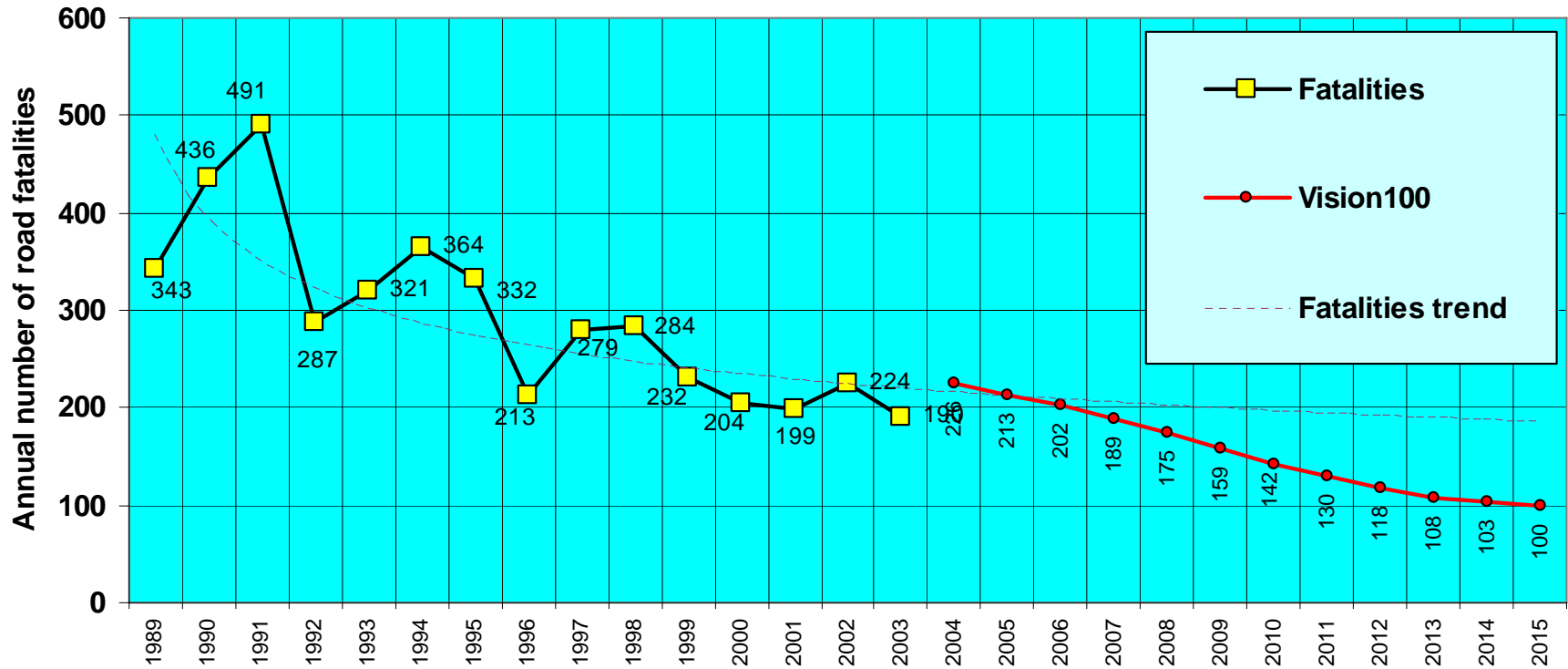
18th ICTCT workshop in
Helsinki, Finland

Pedestrian safety in dark road conditions : The Estonian Experience

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Stratum Ltd., Estonia**

National Road Safety Goals: as in National Road Safety Programme- VISION 100

Road fatalities in Estonia



Road accidents in darkness

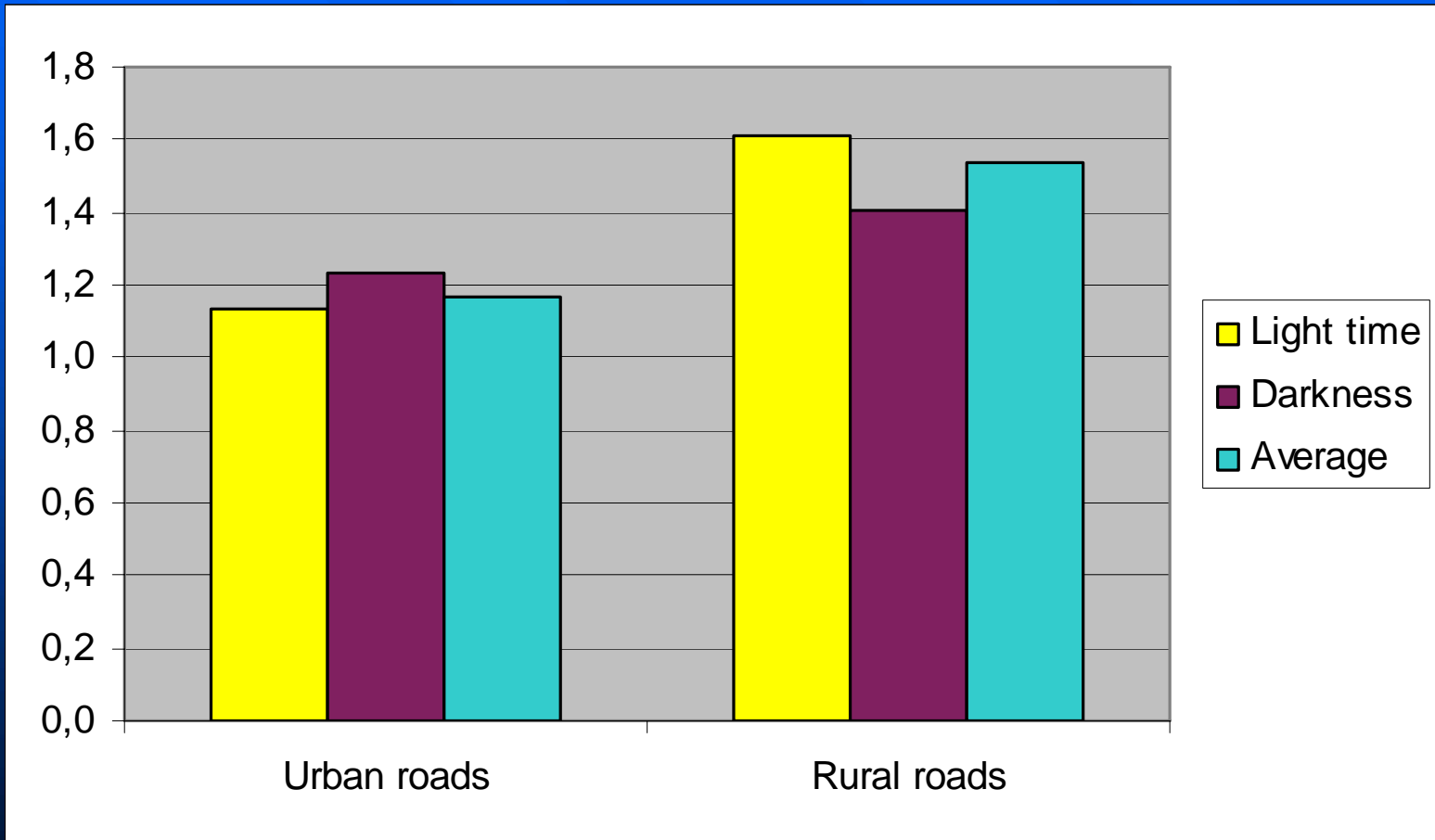
Road accidents and casualties, 2003

Road casualties, Estonia 2003						
	Urban roads		Rural roads		Total	
	Fatalities	Injuries	Fatalities	Injuries	Fatalities	Injuries
Light time	19	876	58	796	77	1672
Darkness	18	408	67	429	85	837
Total	37	1284	125	1225	162	2509

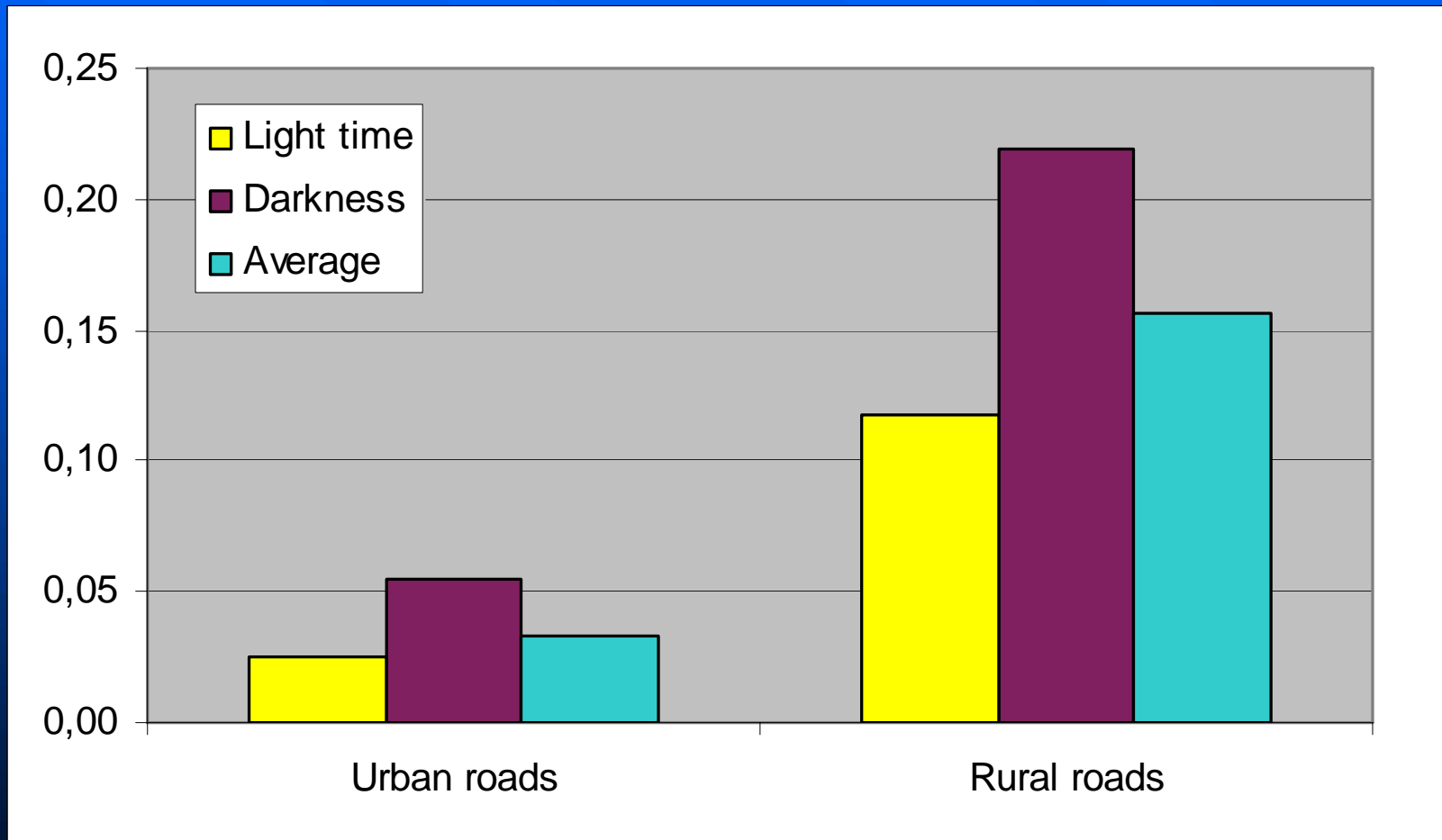
Road accident risk

Casualties per accident, Estonia 2003				
	Urban roads		Rural roads	
	Fatalities	Injuries	Fatalities	Injuries
Light time	0,025	1,133	0,117	1,611
Darkness	0,054	1,233	0,220	1,407
Total	0,034	1,163	0,156	1,533

Road accident risk (Injuries per accident)



Road accident risk (Fatalities per accident)



Risk comparing with average:

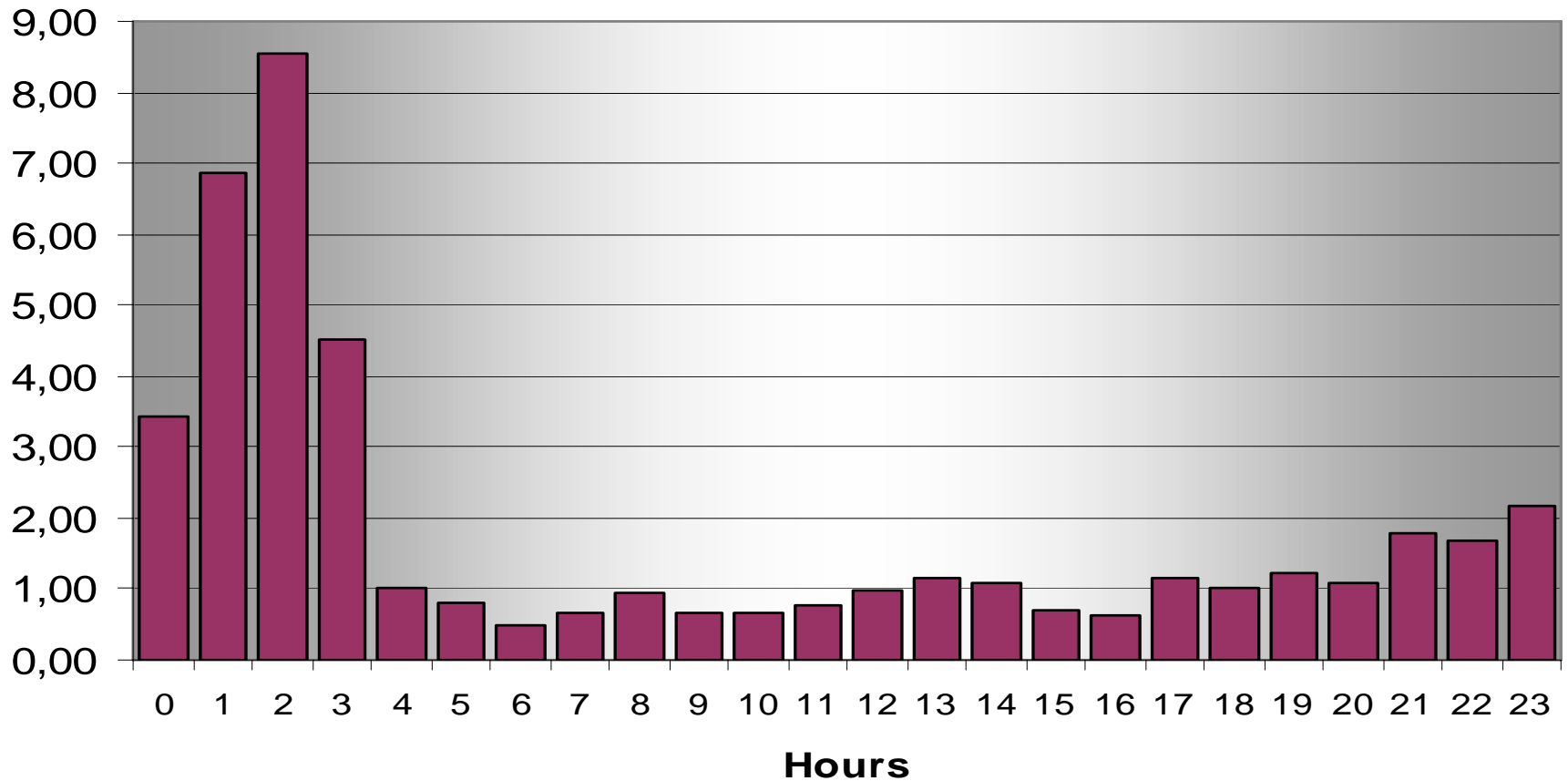
Relative casualty risk, Estonia 2003				
	Urban roads		Rural roads	
	Fatalities	Injuries	Fatalities	Injuries
Light time	73%	97%	75%	105%
Darkness	162%	106%	140%	92%

Thus the traffic in darkness is about twice risky as the lighttime traffic! Especially fatality risk is high!

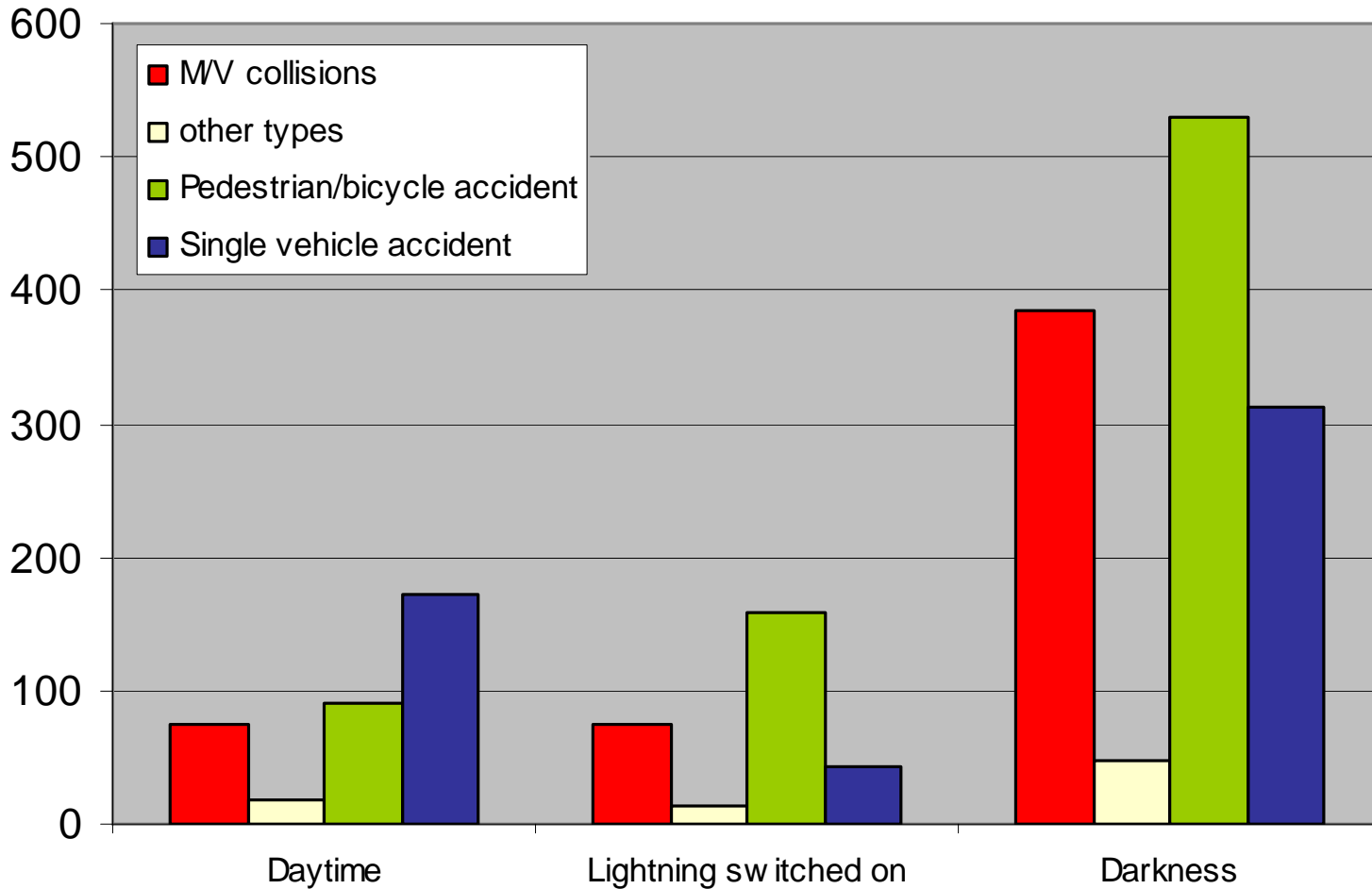
Only daytime injury risk on rural roads is higher than in darkness.

Relative accident risk, considering the traffic

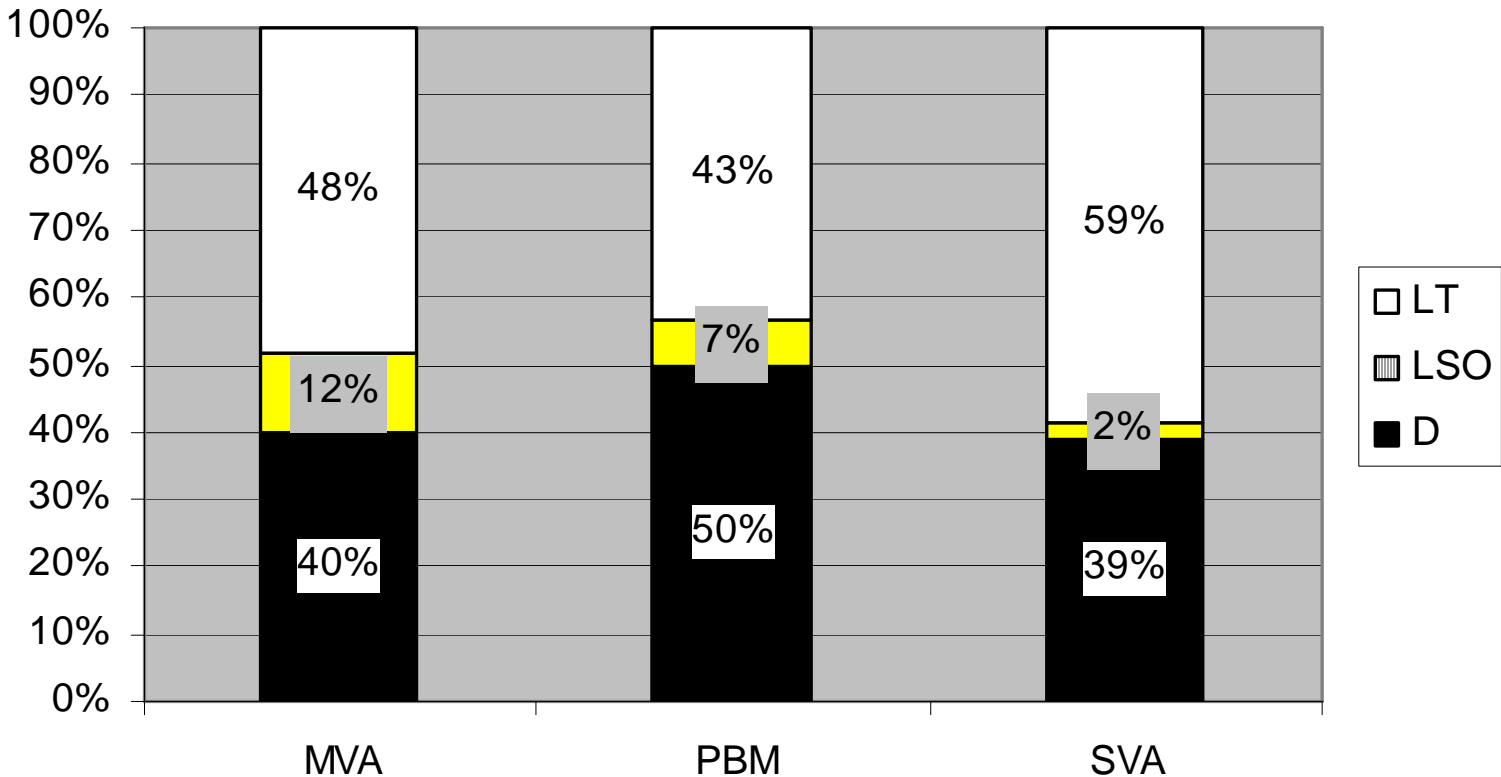
Accident risk (Accident/traffic) comparing with daily average,



Accident types



Fatal accident types and road conditions:

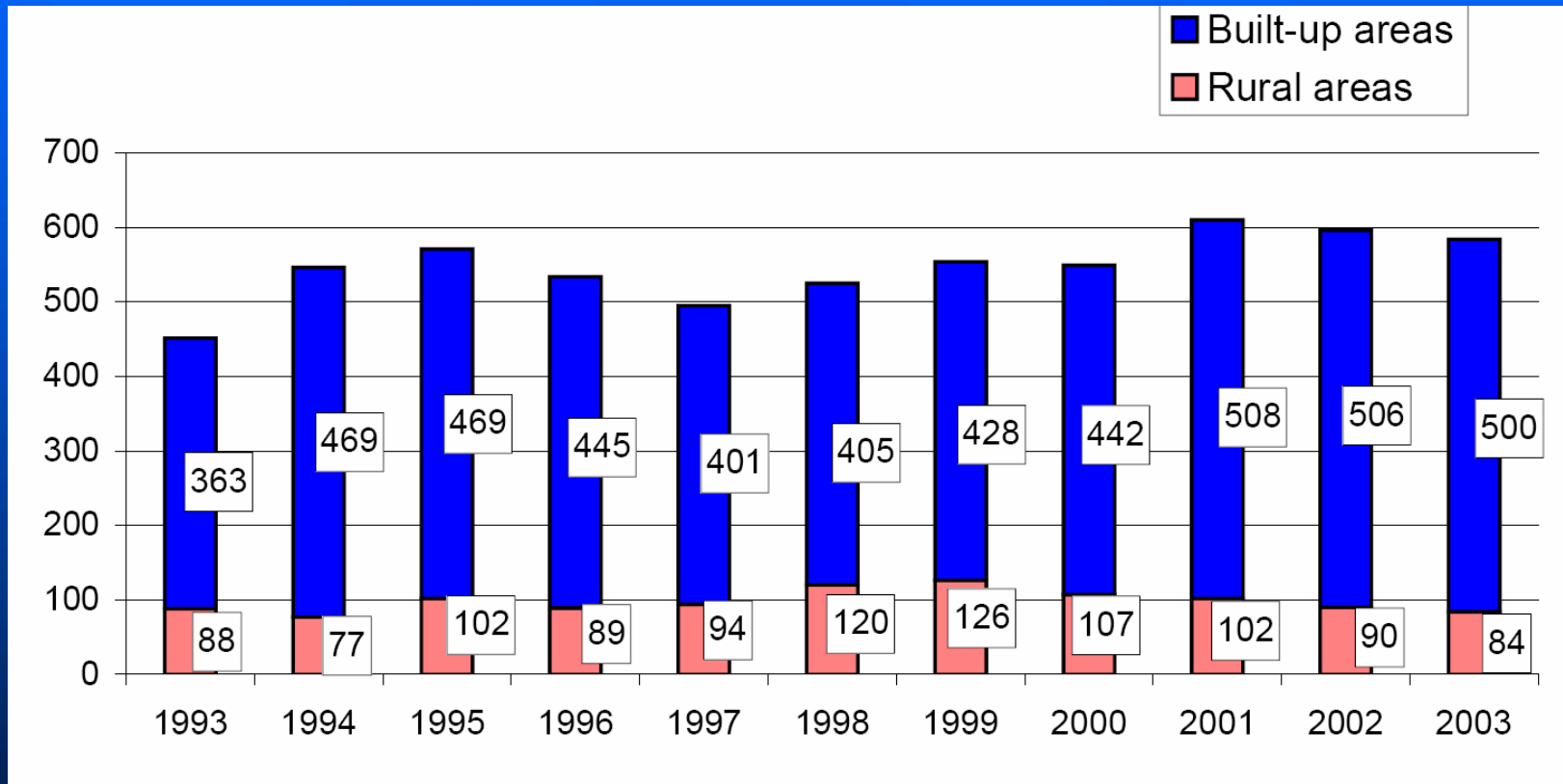


MV collision

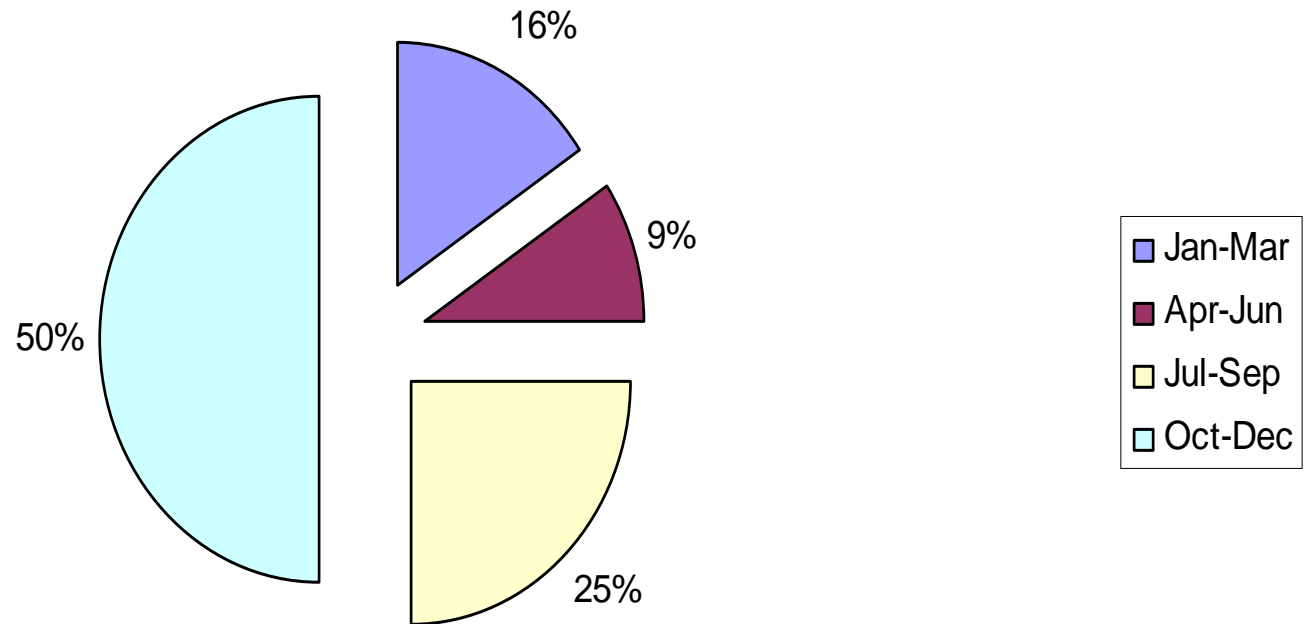
Ped.-bicycle acc.

Single veh. acc.

Accidents between vehicles and pedestrians



Fatalities in pedestrian accidents



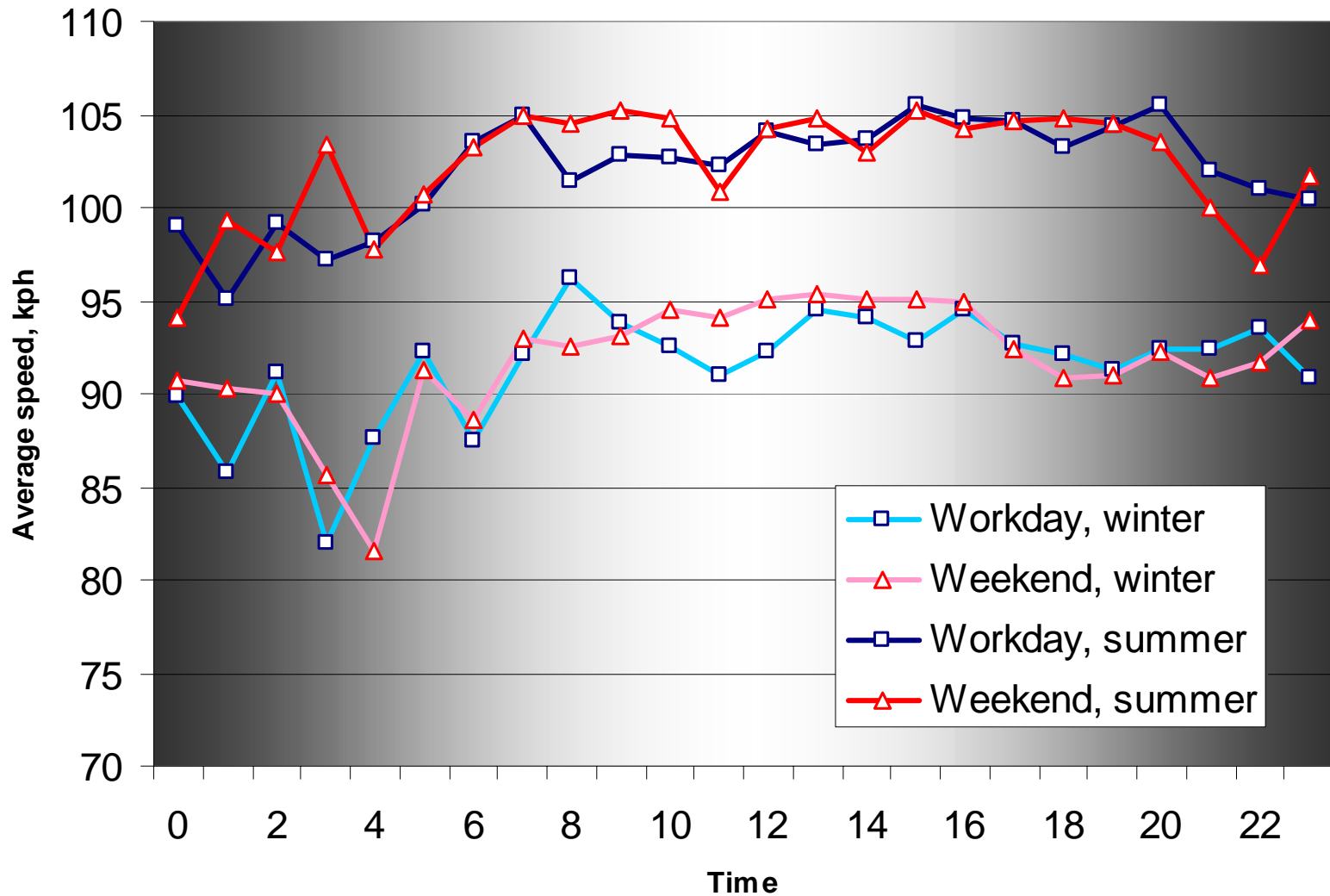
Road users behaviour in darkness

Monitoring

The main topics to monitor were the following:

- Speeding and tailgating;
- Use of daytime running lights;
- Use of turning signal;
- Red light running at signalised intersections;
- Use of reflectors by pedestrians;
- Use of seat belts and children restraints;
- Yielding to pedestrians at zebra crossings;
- Drinking and driving.

Speed behaviour



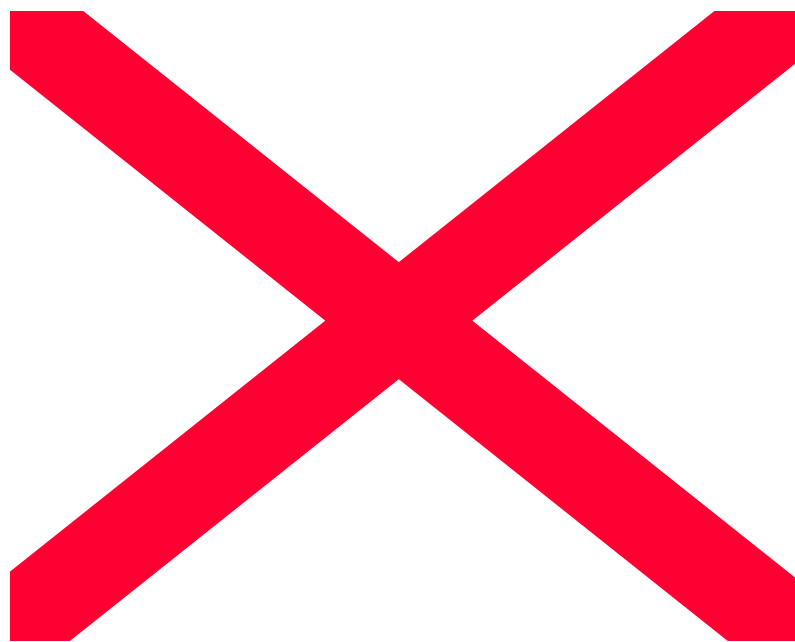
Average speed, kph

Speed limit is 90 (winter) and 110 (summer)

	Winter		Summer	
	Workday	Weekend	Workday	Weekend
Daytime	93.2	94.6	103.3	103.4
Night time	90.4	90.6	98.2	99.0

SPEED BEHAVIOUR:

- The average speed is extremely high during the whole day and over the half of drivers are driving over the speed limit at normal conditions (speed limit 90 kph, but 110 at summer period);
- The differences between the average speed at daytime and night time are minor, which causes a big risk especially at darkness traffic, when visibility is poor.
- Speed is very high considering that vehicles drive mostly low beams on because of oncoming traffic.



SUMMARY:

This study has taken two approaches:

- firstly to ascertain the public perception of the factors that continue to contribute to driver and pedestrian accidents;
- secondly to assess road-use behaviour. In combination these two elements provide the foundation for developing sound strategies.

More clues to effective countermeasure to unsafe traffic behaviour are found in field observations:

- The Estonian roads are not immune to speeders. Rural roads accounted for 77% of the year 2003 fatalities, including 41% (!) at darkness and speeding on these roads is recognized to be a problem.
- The traffic risk is also increased when other mandatory in Estonia road safety measures usage is ignored. When almost 99 per cent of drivers are using the daytime running lights on Estonian roads even at daytime, then 30 per cent of drivers do not use safety belts when driving on rural roads.

Unfortunately the pedestrians and passengers are to adherence safety measures as badly as drivers do

- 70 per cent of passengers do not fasten their seat belt at back seat and 12 per cent of pedestrians are walking on red light at signalised crossings.
- More than half of grown up pedestrians are not wearing reflectors when moving on rural roads in darkness. And also 14 per cent of children do the same.
- About 1/3 of adult pedestrians killed in accidents were drunken.
- An alarming issue is also the drinking and driving where the traffic police has found out the almost 2 per cent of drivers are driving the vehicle under the influence of alcohol (over 0,2 ‰) or drug!

Examples on safety management

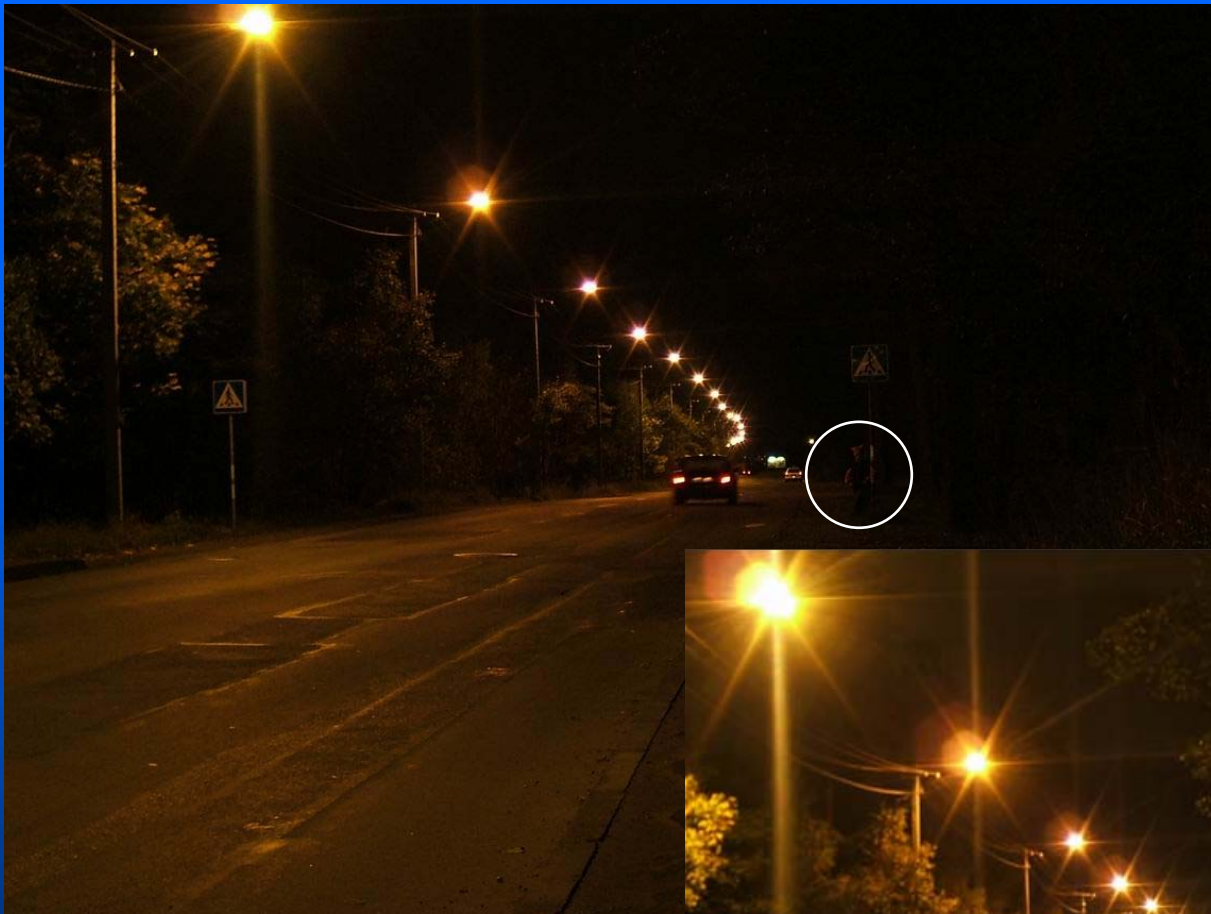
As the pedestrian road safety seems to be the most urgent in urban areas, some measures have been taken to safe vulnerable road users

Bad example



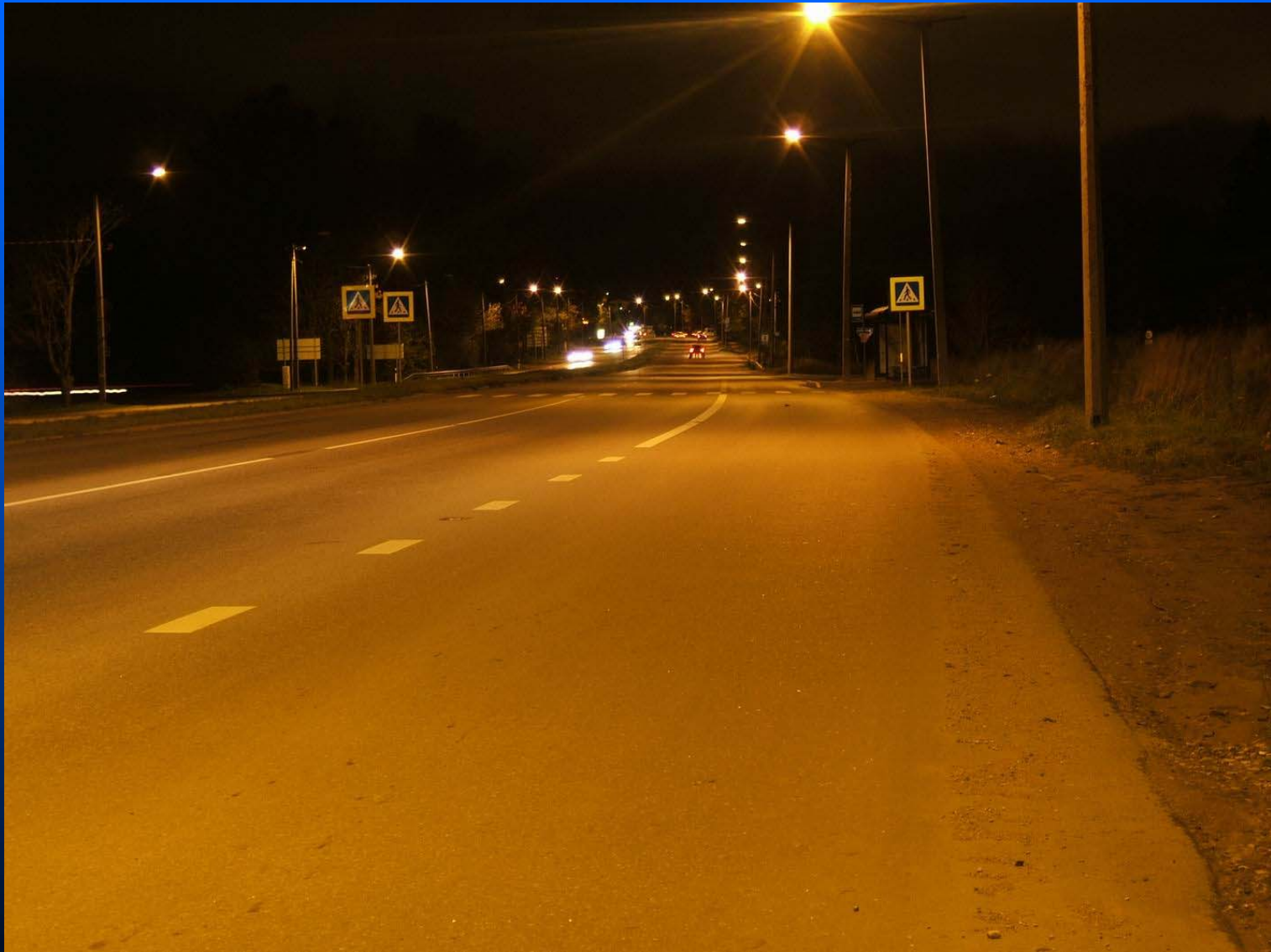
Can you see pedestrians?

Drivers view



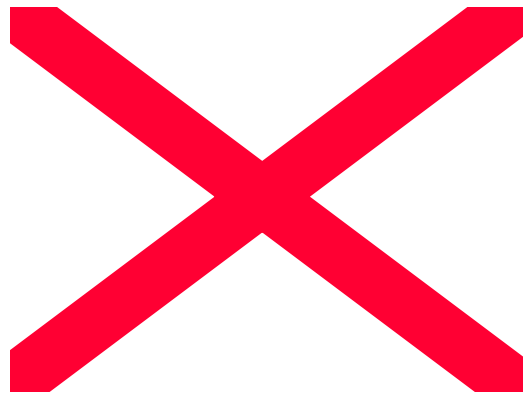
Nightshot

Reflecting board on crossing sign



Local lightning at zebra crossing





Local lightning+speed limit+rumbling pavement marking



THANK YOU!

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