

**Summary:**

# **Changes over time in the risk of apprehension for traffic law violations**

This report presents a study of changes over time in the risk of apprehension for traffic law violations in Norway. Other topics discussed in the report include driver subjective risk of apprehension, the contribution of traffic law violations to traffic injury and measures that can reduce traffic law violations.

## **The risk of apprehension for traffic law violations**

The risk of apprehension for traffic law violations refers to the probability that a traffic law violation is detected and sanctioned by an enforcing body. Road traffic law enforcement in Norway is performed by the police and – for some minor violations – the Public Roads Administration. The risk of apprehension is stated in terms of the number of violations detected per million kilometres of illegal driving, i.e. per million kilometres driven while committing a certain offense. The risk of apprehension has been estimated for 2004-08 and past periods for the following violations:

- Speeding
- Drinking and driving
- Driving when impaired by drugs (legal or illegal)
- Non-wearing of seat belts
- Violations of hours of service and rest regulations
- Using handheld mobile phones while driving

For other traffic violations, no data have been found permitting a numerical estimate of the risk of apprehension. For the violations listed above, the risk of apprehension is highest for drinking and driving (32 instances detected per million kilometres of driving with an illegal blood alcohol level). The risk of apprehension is lowest for driving when impaired by drugs and violating hours of service and rest (less than 5 detected instances per million kilometres of illegal driving). The risk of apprehension for speeding, not wearing seat belts and using a mobile phone is about 12-14 detected instances per million kilometres of driving while committing the violation concerned.

## **Changes over time in the risk of apprehension**

The risk of apprehension when speeding has been estimated for 1971-76, 1980-84, 1993-2002 and 2004-06. The risk of apprehension went down until the 1980s, but has since increased. The recent increase in the risk of apprehension is fully attributable to an increased use of speed cameras. The risk of being apprehended for speeding by a police officer has declined during the whole period after the 1970s.

The risk of apprehension for drinking and driving has been estimated for 1981-82 and 2005-06. The risk of apprehension when driving with a blood alcohol level of more than 50 milligrams per litre (0.05 percent) was reduced from the first period to the second. Driving with a blood alcohol content (BAC) of 0.02 percent was permitted in 1981-82, but illegal in 2005-06. The risk of apprehension when driving with a blood alcohol content between 0.02 and 0.05 percent is very low.

The risk of apprehension when not wearing seat belts has been estimated for 1980-84, 1993-99 and 2004-06. The risk of apprehension increased considerably from the first to the last period. The wearing of seat belts has also increased.

The risk of apprehension when violating hours of service and rest has been estimated for 1984-85 and 2004-08. The risk of apprehension increased from the first to the second period.

For other traffic violations, no data have been found permitting an estimate of changes over time in the risk of apprehension.

## **Driver subjective risk of apprehension**

Interviews by phone have been made in a sample of 1,000 holders of a driving licence for a car (licence types B or BE). The objective was to survey various aspects of the subjective risk of apprehension.

About 78 % of drivers stated that they had not been stopped by the police last year. About 15 % had been checked once and about 7 % had been checked more than once. A majority of the sample, 61 %, correctly stated that the risk of apprehension was higher when speeding by 10 km/h or more than when driving with a BAC of 0.02 percent or more or not wearing seat belts. On the other hand, only 32 % stated correctly that the risk of apprehension when driving with a BAC above 0.1 percent is higher than when speeding by 10-15 km/h or driving after taking amphetamine. The majority, 54 %, erroneously stated that the risk of apprehension was higher when speeding by 10-15 km/h than when driving with a BAC of 0.1 percent.

Drivers appear to overestimate the risk of apprehension when speeding. About 60 % stated that a driver who during one year consistently drove at a speed 15 km/h above the speed limit of 80 km/h would be apprehended every year or every third year. The best estimate of the risk of apprehension for this driver is about once every sixth year. Drivers also overestimate considerably the number of speed cameras installed along roads in Norway.

## The contribution of traffic law violations to traffic injury

The contribution to traffic injury of 15 different traffic law violations has been estimated. Estimates suggest that if these violations were eliminated, the number of road accident fatalities could be reduced by about 50 % and the number of injured road users reduced by about 30 %. There is, in other words, a large potential for improving road safety by eliminating traffic law violations.

The three violations that make the largest contributions to the number of fatalities are speeding (close to 23 %), drinking and driving (close to 17 %), and not wearing seat belts (13 %).

Figure S.1 shows the relationship between the fatality risk attributable to various traffic offences (stated as a proportion) and the risk of apprehension when committing these offences.

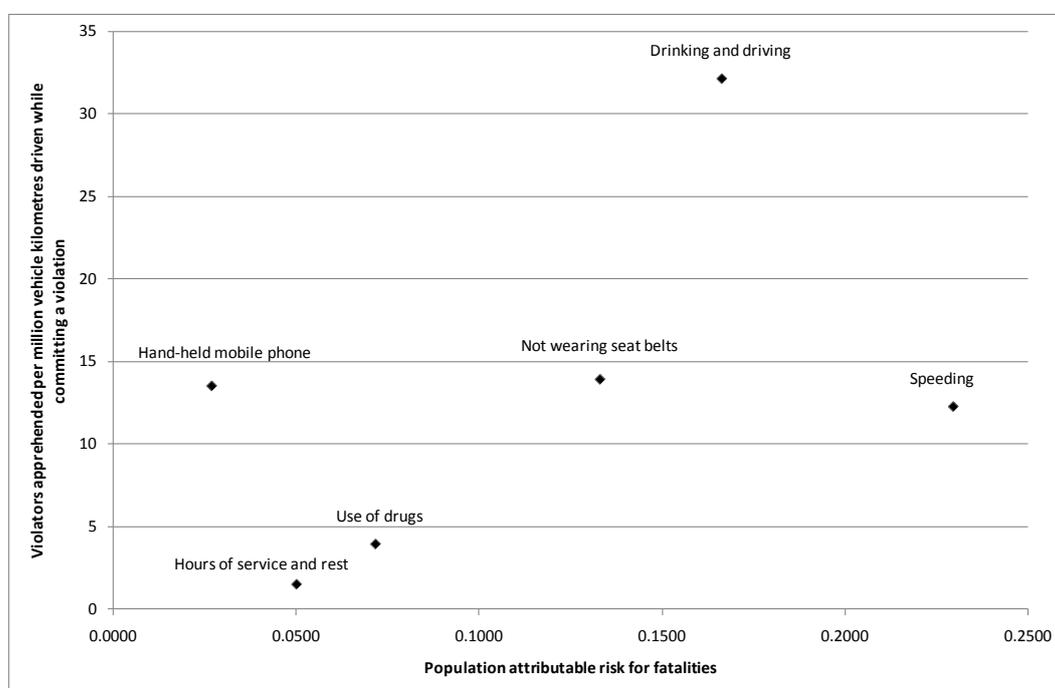


Figure S.1: Relationship between fatality risk attributable to various offences and the risk of apprehension for the same offences

The risk of apprehension when speeding is comparatively low in view of the rather large contribution speeding makes to traffic fatalities.

## Measures to reduce traffic violations

A number of measures may reduce the number of traffic violations. These measures are related to the vehicle, to the design of roads, to traffic control and to police enforcement. In the short term, measures related to road design, traffic control and police enforcement are the most promising. New vehicle safety

features may contribute importantly to reducing traffic violations, but the time horizon for widespread use of such safety features remains uncertain.

Cost-benefit analyses of increasing police enforcement have been made. These analyses show that increasing speed enforcement, drink-driving enforcement and seat-belt wearing enforcement is very cost-effective, i.e. benefits clearly exceed costs. Considerable increases are cost-effective. Further extending the use of speed cameras is also cost-effective.

By introducing cost-effective enforcement designed to reduce traffic law violations, the annual number of fatalities in Norway can be reduced by about 40-45. The mean annual number of fatalities during 2005-2008 was 239.