

Summary:

## **Fatal accidents involving young road users in Norway in 2005-2009**

Analysis of results from in-depth studies by the Norwegian Public Roads Administration

**Non-use of safety belt, speeding, drink driving, reckless driving, and lack of experience and driving skills are some of the main reasons why young male drivers in particular have a very high fatality risk. The biggest problems related to motorcycle and moped accidents are non-use of helmet, speeding, drink driving, excessive belief in own skills, and lack of experience. These are some of the findings from an analysis of 260 fatal accidents involving young road users which have been studied in depth by the Norwegian Public Roads Administration.**

### **Analysis of fatal accidents involving young people**

Since 2005, the Norwegian Public Roads Administration's (NPRA) five regional accident analysis groups (UAG) have studied all fatal accidents in depth. 1,058 fatal accidents have been studied in 2005-2009. In recent years these UAG reports have been used in several research studies.

In 2010, NPRA asked the Institute of Transport Economics (TØI) to analyse fatal accidents in 2005-2009 involving road users between 16 and 24 years. This group, especially young men, have a very high accident risk.

Through this analysis we want to increase our knowledge about fatal accidents precipitated by a young driver of a car, motorcycle or moped. The purpose is also to conduct a methodological evaluation of the use of the UAG database, which has not previously been used for research-based analyses.

### **361 fatal accidents involving young road users**

Fatal accidents involving youth is defined as: *Fatal accidents in which one or more young persons of 16-24 years are killed regardless of whether a youth was driver or not, and fatal accidents in which a youth of 16-24 years was the driver, but was not killed, regardless of whether the driver precipitated the accident or not.*

Of the 1,058 fatal accidents in 2005-2009, 361 meet this definition. These accidents resulted in 415 fatalities of which 283 were 16-24 years old. There were 225 men and 58 women.

The dominant accident groups are single vehicle accidents (39 %) and head-on collisions (39 %). This is followed by accidents in intersections and pedestrian accidents. There is an overrepresentation of single vehicle accidents and head-on

collisions and an underrepresentation of pedestrian accidents compared with other fatal accidents.

Most of our youth accidents happened in summer, which also generally is the time where most fatal accidents occurred. Most accidents happened between 4.00 p.m. and 9.00 p.m., but from midnight to 6.00 a.m. and from 7.00 p.m. to 10.00 p.m., there is an overrepresentation of youth accidents relative to other fatal accidents.

Eight out of ten youth accidents happened on a road section and 60 % of these accidents happened in a curve. This is an overrepresentation compared with other fatal accidents.

Accidents at 70-80 km/h roads are overrepresented, and accidents at 50-60 km/h roads are underrepresented. This is especially the case for accidents involving persons aged 18-19. For accidents involving persons aged 16-17, the opposite is true. About half of the youth accidents happened in darkness or twilight. This is considerably more than for other fatal accidents.

Cars driven by young persons are less well equipped with safety devices, such as airbags and electronic stability control (ESC), than cars with an “older” driver.

### Analysis of 260 fatal accidents involving young road users

In the analysis we zoom in on the 260 fatal accidents in which a young driver of a car, motorcycle or moped most likely precipitated the accident. These are divided into nine sub-groups with respect to vehicle and age, see table i. Only 32 drivers are women. Several of the subgroups are too small to analyse.

Table i. Fatal accidents precipitated by a young driver.

	16-17 years	18-19 years	20-24 years	Total
<b>Car</b>	9	100	106	215
<b>Motorcycle</b>	14	4	19	37
<b>Moped</b>	7	1	0	8
<b>Total</b>	30	105	125	260

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To identify the most important risk factors related to youth accidents we have made a review of 25 relevant studies. These studies identify and focus generally on the same few, but general risk factors, especially related to the driver. We decided to focus the analysis on the following 11 general factors:

1. Deliberate risk search
2. Excessive confidence in own skills
3. Lack of technical driving skills
4. Incorrect or inadequate perception of danger
5. Inadequate interaction with other road users
6. Drink driving.
7. Driving in the dark
8. Distraction from the passengers
9. No safety belt
10. No helmet
11. ” Youth car”.

We have formulated hypotheses for these factors. A hypothesis is for example that lack of technical driving skills is an accident factor in many accidents precipitated by a young driver. Hypotheses for the other risk factors are formulated in the same way. To examine the hypotheses the 88 risk factors used in the UAG

database have been reviewed, and factors characterising the hypotheses have been identified and assigned to each hypothesis.

For car accidents the study supports, to a greater or lesser extent, all the hypotheses for drivers both aged 18-19 and 20-24. Lack of technical driving skills, inadequate perception of risk and inadequate interaction are, however, especially problematic for accidents involving a 18-19 years old driver, while drink driving, driving in the night, and distraction apply in particular to accidents involving drivers aged 20-24. For motorcycle accidents the UAG material more or less supports the hypotheses, with exception of the hypothesis about on night driving, distractions and safety belt. Drink driving and lack of helmet are especially problematic in accidents involving motorcyclists aged 20-24.

Among moped accidents the UAG material only provides support to the hypothesis that lack of helmet is a key risk factor. This lack of support for the other hypotheses has a methodological explanation. In most cases there are too few moped accidents to give or not give support to the hypotheses.

## **The largest road safety problems**

To investigate the 11 general hypotheses we indirectly used the risk factors used by UAG. We have also studied these risk factors more directly to determine what factors account for the largest road safety problems for young drivers.

For the 215 car accidents with young drivers the following factors seem to be the most important safety problems:

- Non-use of safety belt
- Speeding
- Drink driving
- Reckless driving.
- Too much faith in own skills
- Partying in the car
- Lack of experience and driving skills
- Not familiar with the vehicle.

If accidents involving car drivers aged 18-19 and 20-24, respectively, are compared, a positive trend emerges regarding lack of experience and driving skills, not being familiar with the car, and lack of information gathering, while a negative trend applies to drink driving, partying in the car, no safety belt, reckless driving, and too much faith in own skills.

For the 37 fatal accidents involving young motorcycle drivers the biggest driver-related road safety problems seem to be the following:

- Speeding
- Non-use of helmet
- Drink driving.
- No driving licence
- Lack of experience
- Too much faith in own skills.

Comparing the three age groups of young motorcyclists, one notes that certain safety problems increase with age: too much faith in own skills, drink driving, non-use of helmet, and no driving licence. For motorcyclists aged 20-24, drink driving and non-use helmet are particularly important risk factors.

The biggest road safety problems related to the eight moped accidents is non-use of helmet, speeding, drink driving, and too much faith in own skills.

## **Supplementary analysis of 50 fatal accidents**

In addition to the database analysis, we conducted a supplementary analysis of 25 UAG reports where lack of information gathering was a risk factor, and 25 UAG reports where too much faith in own skills was a risk factor. The purpose was to examine what these general concepts mean and to examine if the UAG reports provide additional information compared to the UAG database.

For the first factor the UAG reports gives additional information because the reports in most cases specify the factor to something more concrete. Based on this review we have divided the factor into the following three sub-categories: inattention, lack of communication and poor observation technique / lack of care.

The second risk factor is specified in only six UAG reports. In all 25 accidents the driver was going all too fast and therefore UAG concludes that the driver overestimated his own abilities.

## **Using the UAG database in research projects**

We consider the UAG database to be suitable for research-based analysis of fatal accidents, especially when the analysis includes many accidents. UAG reports are still very relevant for analysis of smaller groups of accidents. The advantages of the UAG database are its cost efficiency and the opportunity to perform cross-analyses and comparison with other accidents.

To make the UAG database even more useful, the various pre-defined factors could be made more accurate and perhaps redefined. This is especially the case of factors that are interpretable in a variety of ways such as lack of information gathering and too much faith in own skills.

It is desirable for the research institutes to have better access to both the UAG database and the UAG reports. Finally, we recommend to continue to update the UAG database with information about future fatal road traffic accidents. It will make the analyses and documentations even better, and make it possible to make analysis of more narrow topics.