



Issued December 2025

REPORT ROAD 2025/04

Part one report – Thematic investigation of accidents involving young people on light motorcycles



This report has been translated into English and published by the NSIA to facilitate access to international readers. As accurate as the translation might be, the original Norwegian text takes precedence as the report for reference.

The Norwegian Safety Investigation Authority (NSIA) has produced this report exclusively for the purpose of improving road safety.

The object of the NSIA's investigations is to clarify the sequence of events and causal factors, elucidate matters deemed to be important to the prevention of accidents and serious incidents, and to issue safety recommendations if relevant. It is not the NSIA's task to apportion blame or liability under criminal or civil law.

This report should not be used for purposes other than preventive road safety work.

Table of contents

SUMMARY	4
1. ABOUT THE THEMATIC INVESTIGATION	7
1.1 Background and purpose	7
1.2 Structure of the thematic investigation	7
1.3 Overview of investigated accidents	8
1.4 Investigation method and implementation	8
1.5 Structure of part one report	9
1.6 Further work with the thematic investigation.....	9
2. INVESTIGATION FINDINGS	11
2.1 Head-on collision involving a light motorcycle and a passenger car on county road FV 115 in Indre Østfold.....	13
2.2 Run-off-road accident involving a light motorcycle on county road FV 115 in Aurskog-Høland	14
2.3 Run-off-road accident involving a light motorcycle on the road E10 in Tjeldsund	15
2.4 Accident at a junction involving a light motorcycle and a passenger car on county road FV 3092 in Færder.....	17
2.5 Measures implemented	18
2.6 Concluding remarks	20
3. SAFETY RECOMMENDATIONS AND LEARNING POINTS.....	23

Summary

This report is based on investigations of four fatal accidents involving light motorcycles in 2024, in which the riders were aged 16–17 years old. The accidents occurred in Færder, Aurskog-Høland, Indre Østfold and Tjeldsund municipalities, and provide a unique insight into the risk factors affecting the youngest motorcyclists.

Although each accident has its own characteristics, the overall analysis reveals a clear pattern of recurring safety issues related to road users' behavior and experience, the technical condition of the vehicles, road conditions, and the effectiveness of protective equipment.

High speed, combined with demanding curves or overtaking at junctions was a contributing factor in three of the four accidents. In the fourth accident, where the speed was likely moderate, unevenness in the road surface caused by frost heave took the rider by surprise, resulting in a fatal outcome. This shows that speed itself is not always the triggering factor, but that high speed reduces the ability to compensate for challenges in the road environment and mechanical defects and deficiencies in the vehicle.

The investigations also point to mechanical issues with the vehicles. Three of the motorcycles – two of which were relatively new – had defects or deficiencies that affected stability and control: worn chains and sprockets, worn tyres, incorrectly mounted wheels, incorrect tyre pressure and degraded suspension. Young riders often have little experience of mechanical checks and maintenance, and parents or guardians have a difficult and unclear role in monitoring vehicle condition. Motorcycles are also exempt from the mandatory periodic roadworthiness test ('PTI'), and spot checks by the Norwegian Public Roads Administration do not detect all mechanical defects and deficiencies. This emerges as a clear area for improvement.

Road conditions contributed to several accidents. Hazardous curves with limited forward visibility and uneven road surfaces contributed to three of the accidents. Roadside terrain and safety barriers worsened the severity of injuries in two of the accidents. This demonstrates that infrastructure designed for cars can pose a lethal hazard to motorcyclists when the safety margins are small.

All motorcyclists were wearing protective clothing and mandatory helmets. In three accidents in which riders died from head injuries, the helmets failed. In one accident, the helmet's quick-release system opened, and in two accidents the helmets failed to absorb and distribute the energy from the impact. In one case, the back protector in the motorcycle jacket did not provide sufficient protection. These findings underline the need for stricter requirements for motorcycle protective equipment. The investigation also raises concerns about helmet performance, particularly regarding protection against impacts to the back of the head.

Overall, the thematic investigation confirms a high level of vulnerability for young riders of light motorcycles. The investigation shows that young riders face a complex and demanding set of risk factors. High speed, limited experience, mechanical defects and deficiencies, challenging infrastructure and vulnerabilities in protective equipment all amplify each other.

Research into brain development has shown that brain functions related to assessing risk, making judgements and responding to rapid and unexpected changes are not fully developed in teenagers. Several of the accidents demonstrate that strategies taught during training are not always applied in practice. This highlights that the transition from theoretical learning to practical competence is a time of particular vulnerability during the first years of riding. The investigation also indicates that both young riders of light motorcycles and their guardians underestimate the risks and believe they are safer in traffic than they actually are.

Given young people's challenges in assessing and managing risk, it is concerning that they are allowed to ride light motorcycles that can reach speeds of up to 120 km/h while being almost unprotected. From a safety perspective, the NSIA believes that raising the minimum age for light motorcycles is an appropriate and important measure, provided that the consequences are thoroughly assessed and addressed.

If the age limit is not raised, a comprehensive, coordinated and extensive effort will be necessary to prevent serious accidents involving young riders on light motorcycles. To reduce the risk of accidents, measures must be implemented at rider level, vehicle level, and at both infrastructure and system levels.

Across the four motorcycle accidents, six key findings emerge:

1. Cornering and overtaking in junctions present a high risk for young riders, and these topics should be given more emphasis in the training.
2. Cornering at high speeds, incorrect braking techniques and small safety margins represent a critical risk area that is exacerbated by mechanical defects and deficiencies.
3. Mechanical maintenance is a critical factor for safely operating a light motorcycle. Young riders often have little experience of assessing the mechanical condition of chains, tyres and brakes.
4. Infrastructure that is not adapted to motorcycles (safety barriers, roadside terrain, uneven road surfaces) contributes to accidents and increases the severity of injuries.
5. The ability of helmets and back protectors to absorb and distribute energy has a direct impact on the outcome of a crash. Current requirements for use and quality of protective equipment are not always sufficient.
6. Secondary factors, such as collisions with safety barriers and roadside terrain, can be a direct contributor to fatal injuries.

The key findings form the basis for several systemic learning points that the NSIA presents in the form of eight safety recommendations to organizations and authorities, aimed at improving safety. The safety recommendations concern raising the minimum age for light motorcycles, improving training and information efforts, assessing additional requirements for protective equipment, closer monitoring of the technical condition of light motorcycles, and implementing measures on road sections with a high accident risk for motorcycles.

In addition, the NSIA points to a number of learning points for road users, parents and guardians, driving instructors and others as a result of the thematic investigation.

1. About the thematic investigation

1.1 Background and purpose	7
1.2 Structure of the thematic investigation	7
1.3 Overview of investigated accidents	8
1.4 Investigation method and implementation	8
1.5 Structure of part one report	9
1.6 Further work with the thematic investigation.....	9

1. About the thematic investigation

1.1 Background and purpose

The thematic investigation includes the four fatal accidents involving young people on light motorcycles that occurred in 2024. The investigation was initiated following two accidents in May 2024, in which two 16-year-olds were killed on light motorcycles in Indre Østfold and Aurskog-Høland, and against the backdrop of the very high risk associated with this road-user group¹. In June and September 2024, a further two fatal accidents involving a 17-year-old and a 16-year-old occurred in Tjeldsund and Færder, respectively, and these were also included in the investigation.

Figures from the Institute of Transport Economics (TØI) for 2022 show that the risk of being killed or seriously injured on a light motorcycle is very high. The risk is about 15 times higher than for mopeds, about twice as high as for heavy motorcycles, and almost 60 times higher than for car drivers.

The purpose of the investigation has been to clarify the sequence of events, circumstances and causal factors in accidents involving young riders on light motorcycles. The NSIA has also examined what might contribute to improve safety and prevent similar accidents and levels of injury in the future.

1.2 Structure of the thematic investigation

The investigation consists of two part reports:

- **Part one report** summarises the sequence of events and circumstances related to the four accidents, as well as contributing factors to the accidents occurring. Based on this, the NSIA has conducted an overall analysis of the findings and identified systemic learning points and areas for safety improvement identified so far in the investigation.

Appendices A–D (in Norwegian only) are included in the Norwegian Part one report and include the individual NSIA reports from each of the four accidents. These reports document the NSIA's investigation and analysis of each accident and describe the sequence of events and circumstances, mechanical conditions, road conditions, driving behaviour and survival factors. The reports are limited to contributing factors at the local level and operational and technical factors relevant to the sequence of events and severity of injuries.

- **Part two report** builds on investigative findings from the four accidents that the NSIA considers require further investigation, and contextualises them with supplementary investigations, data and statistics, as well as organisational and systemic factors.

Owing to the importance of providing the public insight into the sequence of events and causal factors in accidents involving young riders of light motorcycles, and to present safety recommendations to organisations and authorities as early as possible, the NSIA has chosen to publish part one report first.

¹ [Risk in road traffic 2021/22 – Institute of Transport Economics \(TØI\)](#). The report points out that risk figures, especially for small road-user groups, are uncertain: 'The risk calculations are relatively uncertain, and national estimates based on the National Travel Survey (RVU) data are less reliable than before due to a smaller national sample and larger regional subsamples.' Nevertheless, no other risk calculations are currently available.

1.3 Overview of investigated accidents

Table 1: Investigated fatal accidents involving young people on light motorcycles in 2024.

Head-on collision involving a light motorcycle and passenger car on county road FV 115 in Indre Østfold

The motorcyclist lost control in a sharp right-hand curve with limited sight lines, tipped over and slid into the oncoming lane. The motorcycle and driver struck an oncoming car. The motorcyclist died as a result of extensive head injuries. The helmet came off at the moment of impact.

Run-off-road accident involving a light motorcycle on county road FV 115 in Aurskog-Høland

The motorcyclist lost control in a right-hand curve following a long straight stretch of road, in a series of curves on a downhill gradient. The motorcycle and rider crossed the oncoming lane and struck the safety barrier. The rider was thrown from the motorcycle, struck a safety barrier post with his back, and died from extensive injuries to his back and chest.

Run-off-road accident involving a light motorcycle on the E10 in Tjeldsund

The motorcyclist lost control after the crest of a hill, on a virtually straight section of road with bumps in the road surface. The motorcycle and rider left the carriageway and ended up in the road-side ditch. The rider hit rocks in the roadside terrain and sustained fatal head injuries.

Accident at a junction involving a light motorcycle and a passenger car on county road FV 3092 in Færder

The rider attempted to overtake on the left-hand side of a car that intended to turn left at a junction. The driver neither saw nor heard the motorcycle before the collision. The motorcycle and rider struck the car's left front wing. The rider was thrown from the motorcycle and sustained fatal head injuries.

1.4 Investigation method and implementation

1.4.1 NOTIFICATION OF ACCIDENTS

When the first fatal accident in 2024 involving a young person on a light motorcycle occurred in May, the NSIA became aware of the incident through the media and subsequently conducted an inspection of the accident site and the motorcycle. The NSIA also detected the second fatal accident via the media on the day it occurred. The NSIA deployed to the accident site and were present at the same time as the police and personnel from the Norwegian Public Roads Administration.

The NSIA then sent a request² to the police and the Norwegian Public Roads Administration for immediate notification of serious accidents involving young people on light motorcycles in Innlandet and the Eastern Norway regions.

Between June and the end of December 2024, the NSIA was notified of 15 accidents involving young people on light motorcycles, and responded to three of these, based on severity. The accident in Tjeldsund in June was detected by the NSIA via the media, and the NSIA deployed to the site of the accident the following day. The NSIA was notified by the police of the accident in Færder and deployed to the accident site the same day.

² Cf. [regulation 30 June no. 793 on Public Investigation and Notification of Traffic Accidents etc section 4 second paragraph subparagraph d.](#)

1.4.2 SOURCES OF INFORMATION AND INVESTIGATIONS

The investigations into the four fatal accidents included gathering information about the road users and vehicles involved, as well as information about road, weather and driving conditions. The NSIA carried out an inspection at all accident locations, conducted technical examinations of the motorcycles with assistance from the manufacturers' representatives, and conducted interviews with those involved, witnesses and bereaved relatives. The NSIA has also obtained information from the relevant road authorities (three county authorities and the Norwegian Public Roads Administration) and the driving schools.

In addition, the NSIA has received assistance from the Department of Forensic Medicine at Oslo University Hospital HF (OUS) to assess the motorcyclists' injuries and injury mechanisms. The Research Institute of Sweden (RISE) has assisted the NSIA with analysing and testing motorcycle protective equipment. The NSIA also undertook measurements, reconstructions, simulations and calculations relevant to the various accidents. This was technically demanding due to limitations in the available data.

1.4.3 FRAMEWORK AND ANALYSIS PROCESS FOR SAFETY INVESTIGATIONS

The incident has been investigated and analysed in line with the NSIA's framework process for systematic safety investigations ([the NSIA method](#)).

1.5 Structure of part one report

The report's second chapter, Investigation findings, summarises the NSIA's findings in the four accidents related to the rider, survival factors, the vehicles and the road. The chapter also provides a summary of the sequence of events, circumstances and causal factors in the four accidents. This is followed by an overview of the measures that have been implemented as a result of the accidents, and concluding remarks.

Chapter 3 presents the Norwegian Safety Investigation Authority's safety recommendations and learning points so far in the thematic investigation.

1.6 Further work with the thematic investigation

The NSIA's further work on part two report includes the following areas:

- Mechanical condition, inspection and maintenance of light motorcycles.
- Properties, requirements and use of protective equipment for motorcyclists.
- Safety follow-up of road networks with regard to motorcyclists.
- Supplementary data and statistics on motorcycle accidents and risk factors.

The scope and complexity of the thematic investigation mean that the Norwegian Safety Investigation Authority cannot estimate a publication date for part two report. Additional work remains regarding the collection and quality assurance of factual information, analysis and conclusions before part two report can be circulated for external review and published.

2. Investigation findings

2.1 Head-on collision involving a light motorcycle and a passenger car on county road FV 115 in Indre Østfold	13
2.2 Run-off-road accident involving a light motorcycle on county road FV 115 in Aurskog-Høland	14
2.3 Run-off-road accident involving a light motorcycle on the road E10 in Tjeldsund	15
2.4 Accident at a junction involving a light motorcycle and a passenger car on county road FV 3092 in Færder	17
2.5 Measures implemented	18
2.6 Concluding remarks	20

2. Investigation findings

Combined analysis of investigation findings in four accidents

Road users:

- All of the motorcyclists had held their licences for less than one year.
- The chosen speed of three of the motorcyclists was close to or exceeded personal and physical limits.
- The motorcycles had been given partly inadequate maintenance in three accidents.
- Strategies taught during training were not always applied.
- One accident involved high speed and overtaking at a junction on a priority road.
- Incorrect braking technique in a curve was applied in one accident.

Survival factors:

- All motorcyclists were wearing motorcycle-specific clothing in addition to the mandatory helmet.
- In two accidents, the helmet was unable to absorb and distribute the energy from the impact to the back of the head.
- In one accident, the helmet's quick-release chin strap failed, causing the helmet to come off.
- In one accident, the motorcycle jacket with an integrated back protector did not sufficiently reduce the severity of injuries when striking a safety barrier post.

Vehicle:

- Defects and deficiencies in the mechanical condition of the motorcycles contributed to three accidents:
 - Incorrect tyre pressure
 - Insufficient tyre tread depth
 - Slack, wear and lack of lubrication of chain and sprocket
 - Play in wheel bearings and steering head bearings
 - Wheel fitted incorrectly
 - Reduced damping function and leakage from a shock absorber
- Wear parts on light motorcycles appear insufficiently robust for their typical usage.
- Two of the motorcycles, were relatively new, and had not been stopped and inspected by the Norwegian Public Roads Administration's roadside inspection unit.
- One motorcycle had been inspected by the Norwegian Public Roads Administration without the mechanical defects and deficiencies present at the time of the accident being detected.

Road conditions:

- Hazardous curves with limited forward visibility contributed to two of the accidents.
- Bumps and unevenness in the road surface caused by frost heave contributed to one of the accidents.
- Roadside terrain and safety barriers worsened the severity of injuries in two of the accidents.
- Junction layout may have contributed to one of the accidents.
- A motorcycle protection system for safety barriers, particularly in combination with an airbag vest, could have reduced the severity of injuries in one of the accidents.

Across the four motorcycle accidents, six key findings emerge:

1. Cornering, overtaking and junctions present a high risk for young riders, and these topics should be given more emphasis in training.
2. Cornering at high speeds, incorrect braking techniques and small safety margins represent a critical risk area that is exacerbated by mechanical defects and deficiencies.
3. Mechanical maintenance is a critical factor for safely operating a light motorcycle. Young riders often have little experience of assessing the mechanical condition of chains, tyres and brakes.
4. Infrastructure that is not adapted to motorcycles (safety barriers, roadside terrain, uneven road surfaces) contributes to accidents and increases the severity of injuries.
5. The ability of helmets and back protectors to absorb and distribute energy has a direct impact on the outcome of a crash. Current requirements for use and quality of protective equipment are not always sufficient.
6. Secondary factors, such as impact with safety barriers and roadside terrain, can be the direct cause of fatal injuries.

2.1 Head-on collision involving a light motorcycle and a passenger car on county road FV 115 in Indre Østfold

The 16-year-old driver was travelling south on county road FV 115 on a light motorcycle (Voge R125, 2023 model). At the time of the accident it was daylight, with no precipitation and a dry road surface. The motorcyclist was riding on a section of road with several sharp curves with a speed limit of 80 km/h.

The accident occurred when the rider lost control of the motorcycle in a sharp right-hand curve with limited forward visibility. The rider and the motorcycle hit the ground and slid into the oncoming lane, colliding with an oncoming car (see figure 1). The car driver braked quickly but had no possibility of avoiding the collision. The rider of the motorcycle sustained extensive head injuries and died as a result of the accident.



Figure 1: The accident site on the FV 115 in Indre Østfold. Photo: The police.



Figure 2: Damaged fastening mechanism (quick release) on the motorcyclist's helmet on county road FV 115 in Indre Østfold. Photo: The Research Institute of Sweden (RISE).

The NSIA's calculations and simulation show that the motorcycle's speed in the curve when it tipped over was likely approximately 80 km/h.

Due to reduced road traction caused by high tire pressure, especially in the front tire, the speed may have been somewhat lower. There was also some gravel in the curve, which could have negatively affected road traction, along with the other factors involved in the accident. The speed was close to or above the motorcycle's critical speed considering the available road traction and lean angle, which caused the motorcycle to slide and understeer in the curve.

Based on the combined factual findings, the NSIA assesses that high speed in relation to the curve and high front-tyre pressure caused the accident to occur. The right-hand curve in question is particularly demanding as it is a decreasing-radius curve, based on the motorcyclist's direction of travel. Coupled with obstructions to visibility, this can be challenging for motorcyclists as it requires both a reduction in speed and change of direction while already in the curve.

The motorcyclist was wearing motorcycle-specific clothing and mandatory helmet. He was wearing a motorcycle hoodie and motorcycle gloves. The investigation showed that the quick-release

coupling on the helmet's chin strap had an adverse design feature that caused it to open as a result of mechanical forces (see figure 2). The rider sustained fatal head injuries when the helmet came off and the rider ended up underneath the car. The other injuries sustained in the collision with the car were survivable with rapid and appropriate medical treatment.

No safety recommendation to the local road authority is issued based on this investigation, as Østfold County Authority has already introduced measures to improve road safety on the section of road (see chapter 2.5.2).

2.2 Run-off-road accident involving a light motorcycle on county road FV 115 in Aurskog-Høland

The 16-year-old rider was travelling north on county road FV 115 on a light motorcycle (Kawasaki Z125, 2022 model). At the time of the accident it was daylight, with no precipitation and a dry road surface. After riding along a straight section of more than 300 metres, the motorcyclist entered a section of road with a combination of curves and a downhill gradient in the direction of travel. The speed limit was 80 km/h.

The accident occurred when the rider lost control of the motorcycle in a sharp right-hand curve with limited forward visibility (see figure 3). The rider fell off the motorcycle and hit a safety-barrier post on the opposite side of the carriageway (see figure 4). The rider sustained extensive injuries to the back and chest and died as a result of the accident.



Figure 3: The accident site on the FV 115 in Aurskog-Høland. Photo: NSIA



Figure 4: The motorcyclist on county road FV 115 in Aurskog-Høland struck a safety barrier post and died from the injuries. Photo: NSIA

The NSIA's calculations and simulations show that the motorcycle's speed in the curve was approximately 80 km/h when it skidded and fell. The speed was close to or above the motorcycle's critical speed considering the available road traction and lean angle. Due to reduced road traction from a new rear tire, the speed may also have been somewhat lower. In addition, the rear wheel was mounted at an angle. This could have contributed to the rear tire losing grip in the curve and the motorcycle behaving unstably in the longitudinal direction.

Based on the marks at the scene and the NSIA's calculations, the reduction in speed was small before the motorcycle hit the guardrail. This may indicate that the rider did not use the front brake. The marks show that the rear brake may have been applied at the beginning of the sequence of events. The motorcycle's chain and sprockets were worn and poorly lubricated, which could also have affected the course of events.

In 2013, a shared-use path was established parallel to the county road. At the same time, a guardrail without a motorcycle protection system was installed on the outer curve, between the carriageway and the shared-use path. According to information the NSIA has received from the county authorities, no assessments of motorcycle safety have been conducted for this section. The investigation has shown that the placement and design of the guardrail contributed to the extent of the injuries being so severe that the rider was killed.

Based on the compilation of factual information, NSIA assesses that high speed in the curve and a large lean angle, combined with the motorcycle's technical condition, caused the accident to occur. The road slopes downward toward the right-hand curve, while the curve also has sight obstructions on the inside. This can be challenging for motorcyclists, as it requires both speed reduction and a change of direction when entering and navigating the curve.

The motorcyclist was wearing motorcycle-specific clothing and mandatory helmet. He was wearing a motorcycle jacket with a built-in soft back protector of the highest classification, motorcycle trousers and motorcycle gloves. The driver struck a safety barrier post with the right side of his back, which was partially covered by the back protector. The forces were so great that the NSIA considers the chances of survival to be low. A motorcycle protection system for road-side safety barriers, especially in combination with an airbag vest, could have significantly reduced the rider's injuries to a survivable level.

As a result of the investigation, Akershus County Authority is advised to review high-risk curves with safety barriers on county roads with regard to motorcycle safety.

2.3 Run-off-road accident involving a light motorcycle on the road E10 in Tjeldsund

The 17-year-old driver was travelling south on the E10 on a light motorcycle (Yamaha MT125, 2017 model). At the time of the accident, it was light owing to the midnight sun, with no precipitation and a dry road surface. The speed limit was 80 km/h.

The accident occurred shortly after the crest of a hill on a clear straight stretch of road when the rider lost control of the motorcycle and left the carriageway (see figure 5). The rider struck a rock in the roadside terrain and was then thrown back onto the carriageway, while the motorcycle continued some distance further off the road. The rider sustained extensive head injuries and died as a result of the accident.



Figure 5: The accident site on the E10 in Tjeldsund with bumps in the road surface and rocks in the roadside terrain. Photo: The police



Figure 6: Crack (white arrow) in the rider's helmet from the E10 accident in Tjeldsund. Photo and labelling: NSIA

The road surface had bumps and unevenness due to frost heave located in the centre of the motorcycle's lane. The crest immediately before the accident site limited the rider's view of the road surface, so the bumps may have come unexpectedly. Alternatively, the rider may have attempted an evasive manoeuvre to the right in order to avoid the bumps, and in the process left the carriageway.

The motorcyclist was likely travelling below the speed limit on that stretch of road. The NSIA's calculations indicate a speed of 47–69 km/h just before the motorcycle left the carriageway. Beyond the edge of the carriageway was a narrow ditch with a steep slope and narrow ditch bottom. Once the rider had left the carriageway, there was therefore little room to regain control and return to the carriageway.

The investigation has shown that the mechanical condition of the motorcycle may have contributed to the loss of control on the uneven road surface. The motorcycle had degraded front suspension damping, low tyre pressure, and play in the steering-head bearings, swingarm bearings and front-wheel bearings. Seven months before the accident, the motorcycle had been issued a prohibition of use order by the Norwegian Public Roads Administration due to several technical deficiencies. The prohibition of use order was lifted 40 days before the accident. The mechanical defects and deficiencies present at the time of the accident were not detected during the Norwegian Public Roads Administration's inspections.

Based on the combined factual findings, the NSIA assesses that the condition of the road – with bumps and unevenness – combined with the motorcycle's mechanical condition, caused the accident to occur. The NSIA believes that a more experienced rider on a motorcycle in good mechanical condition would have been better equipped to deal with unexpected irregularities in the road surface

The motorcyclist was wearing motorcycle-specific clothing and mandatory helmet. He wore a motorcycle jacket with a back protector and motorcycle gloves. However, the protective equipment had limited potential to reduce injury severity due to the non-forgiving roadside terrain, with protruding stones and rocks. The helmet was unable to absorb and distribute the energy from the impact to the back of the head (see figure 6), making the accident fatal.

Prior to the accident, the operating contractor for that section of road and the Norwegian Public Roads Administration had assessed that the bumps did not present a hazard to traffic. Following the accident, the Norwegian Public Roads Administration installed a hazard warning sign. No safety recommendation is issued to local road authority based on this investigation.

2.4 Accident at a junction involving a light motorcycle and a passenger car on county road FV 3092 in Færder

The 16-year-old driver was travelling south on county road FV 3092 on a light motorcycle (Kawasaki Ninja 125, 2019 model). A passenger car was also travelling in the same direction, ahead of the motorcycle. At the time of the accident it was daylight, with no precipitation and a dry road surface. The speed limit on the section of road was 50 km/h.

The accident occurred when the motorcycle attempted to overtake the car just before a junction, while the car turned left into the junction (see figure 7). The right-hand side of the motorcycle struck the car's left-hand front wing (see figure 8). The rider was thrown off the motorcycle, over the bonnet of the car, and landed in the roadside ditch. The driver sustained extensive injuries to the back of the head and died as a result of the accident.



Figure 7: Overview of the accident site county road FV 3092 in Færder. Photo and labelling: Norwegian Public Roads Administration



Figure 8: The position of the vehicles in the collision on county road FV 3092 in Færder. Photo: NSIA

The NSIA's calculations and simulations indicate that the motorcycle's speed was likely around 95 km/h just before the collision with the car. The NSIA has assessed that the car was traveling at approximately 30–40 km/h at the time of the collision.

The accident occurred at a clear, open junction, with no sight obstructions or other road users present. The motorcycle's speed during the overtaking manoeuvre reduced the rider's ability to observe that the car was about to turn left and to take corrective action. The driver neither saw nor heard the motorcycle before the collision. The NSIA has not been able to verify whether the car indicated left before the junction, but the driver states that the indicator was used. The junction

layout may have contributed to the car adopting a less favourable line into the junction than would have been the case if the junction had been perpendicular and/or channelised³.

Based on the combined factual findings, the NSIA assesses that the motorcyclist's decision to overtake at high speed, coupled with the car driver's failure to detect the motorcycle before turning left into the junction, caused the accident to occur. The motorcycle was in good mechanical condition and there were no mechanical defects or deficiencies on the motorcycle that contributed to the accident.

The motorcyclist was wearing motorcycle-specific clothing and mandatory helmet. He wore a motorcycle jacket with padding (without a back protector) and motorcycle gloves. However, the protective equipment had limited potential to reduce injury severity due to the high energy in the collision. The helmet was unable to absorb and distribute the force from the impact to the back of the head, and the accident was therefore fatal.

No safety recommendation is issued to the local road authority based on this investigation.

2.5 Measures implemented

2.5.1 INFORMATION ABOUT PRELIMINARY FINDINGS, SPRING 2025

In April 2025, the NSIA informed the Norwegian Public Roads Administration, as supervisory authority and specialist body, of the technical findings of the thematic investigation. This allowed the Norwegian Public Roads Administration – during the course of the NSIA's investigation and at the start of the new motorcycle season – to be aware of the findings and, where possible, implement necessary measures while awaiting the final results.

Furthermore, the NSIA issued a press release communicating the findings and encouraging motorcycle riders, parents and guardians, driving instructors and others to inspect, correct and carry out maintenance of motorcycles before the start of the season. The NSIA also emphasised that another key lesson that can be learned from the accidents: the importance of adapting speed to the traffic environment and ensuring sufficient safety margins to detect hazards and react in time to avoid an accident.

The Norwegian Public Roads Administration has provided the following account of actions taken after receiving the NSIA's letter in April 2025:

Raising awareness about the mechanical condition of motorcycles has been part of the communication from the Norwegian Public Roads Administration and the collaborative 'MC-dugnaden' (a motorcycle safety initiative), both on websites and in social media.

A video about mechanical checks was shared on social media during the summer, aimed at younger riders. The MC-dugnaden member NMCF (the dealers' association) has organised parent meetings, where mechanical condition has been an important topic, as well as offering inspections of light motorcycles by a mechanic.

The Norwegian Public Roads Administration is currently working on a new national campaign for motorcycles that will be launched in 2026. Whether the campaign will address the mechanical condition of light motorcycles specifically or in general has not been decided. If

³ Channelisation is a measure of directing traffic in specific lanes or in specific ways (physical or marked traffic islands). (Directorate of Public Roads, 2013: Manual N100 Veg- og gateutforming ('Road and street design' – in Norwegian only))

light motorcycles are not specifically addressed in the National Campaign, MC-dugnaden will be used to develop material and smaller campaigns targeting this issue.

The Norwegian Public Roads Administration regularly inspects light motorcycles during the summer season. Inspection activity is highest during the early spring (April/May) and towards the start of the school year, especially in close proximity to upper secondary schools. The thematic investigation has been circulated internally within the division and discussed in status meetings with managers. The Norwegian Public Roads Administration has concluded that there is no need to amend the inspection instructions, but has asked operation units to pay particular attention to the issues identified in the thematic investigation when performing mechanical roadside checks.

A revised roadworthiness package is currently under consultation in the EU and proposes mandatory PTI [periodic technical inspections] for heavy motorcycles (motorcycles with engine displacement of more than 125 cc (cm³) or engine power of more than 11 kW). The Norwegian Public Roads Administration considers that if mandatory PTI for heavy motorcycles is introduced, it would be appropriate to also assess whether light motorcycles – and possibly mopeds – should also be included in the roadworthiness scheme in Norway.

The Norwegian Public Roads Administration is closely following this work in the EU and participates in several international working groups. Next week, together with Finland, it will visit Sweden to learn more about their practical implementation of PTI on motorcycles.

The current status of the legislative process and Norway's position on the proposal can be found at Europalov.no at: <https://europalov.no/rettsakt/kjoretoykontroll-endoringsbestemmelser-forslag-2025/id-33706>

2.5.2 LOCAL MEASURES

After the accident on county road FV 115 in Indre Østfold, Østfold County Authority renewed the existing hazard markers and warning signs on the section of road. In addition, two new chevron signs were installed, including one on the accident curve (see figure 9).

Following the accident on the E10 in Tjeldsund, the Norwegian Public Roads Administration erected a temporary hazard warning sign about 150 metres before the accident site (see figure 10) warning of an uneven road (sign 108). On 31 March 2025, the Norwegian Public Roads Administration decided to erect a permanent sign 108 at the same location.



Figure 9: New chevron signs in the right-hand curve along county road FV 115 in Indre Østfold. Photo: NSIA



Figure 10: Temporary sign 108 uneven road on E10 in Tjeldsund. Photo: Norwegian Public Roads Administration 22 June 2024

2.6 Concluding remarks

Overall, the thematic investigation confirms a high level of vulnerability for young riders of light motorcycles. The investigation shows that young riders face a complex and demanding set of risk factors. High speed, limited experience, mechanical defects and deficiencies, challenging infrastructure and vulnerabilities in protective equipment all amplify each other.

Research into brain development has shown that brain functions related to assessing risk, making judgements and responding to rapid and unexpected changes are not fully developed in teenagers⁴. So, there are biological reasons, common to *all* teenagers, why making sound, split-second decisions – especially when faced with unexpected hazards – is more difficult than it is for adults. Keeping a cool head, for example, can be more difficult when dealing with unexpected situations on the road.

It is therefore concerning that young people are permitted to ride virtually unprotected on light motorcycles that can reach speeds of up to 120 km/h.

From a safety perspective, the NSIA considers raising the minimum age for light motorcycles to be an appropriate and important measure, provided that it is thoroughly assessed how the risk may be shifted to other vehicle types such as ATVs/UTVs, mopeds, and small electric vehicles. In addition, it is necessary to evaluate which measures need to be implemented to manage any risk that may be shifted.

The NSIA has consulted the Norwegian Public Roads Administration on whether a national limit on the maximum design speed for light motorcycles could be introduced, but this does not appear possible within the constraints of the European regulations for motorcycles.

⁴ [Adolescent neurodevelopment – PubMed](#).

See also the NSIA Marine [Report 2025/03](#) on a collision between a leisure boat and a jet ski in Fognafjord, Stavanger, on 1 September 2024, in which two boys aged 15 and 16 were killed.

The findings of the thematic investigation show a gap between what young riders and their parents or guardians believe is an acceptable level of safety – in terms of mechanical condition, protective equipment and the young person's driving behaviour – and the actual level of safety documented in the accidents. As a result, young riders and their parents or guardians are at risk of underestimating danger and believing they are safer in traffic than they truly are.

By increasing the age limit, the rider's brain function will have progressed further in its development before being exposed to the high-risk decision-making situations inherent in motorcycle riding. Information work and training are other important aspect, providing the decision-making process the best possible foundation. Whether this knowledge will be accessed in the moment of need is still not guaranteed. Repetition and practical training can help, by strengthening the neural networks of the motorcycle rider. The stronger these networks are (the more one has practised), the more automatic responses become, reducing the need for conscious reasoning in a dangerous situation. This is where practical experience plays its part.

If the age limit is not raised, a comprehensive, coordinated and extensive effort will be required to prevent serious accidents involving young riders on light motorcycles. To reduce the risk of accidents, measures must be implemented at rider level, vehicle level, and at both infrastructure and system levels.

3. Safety recommendations and learning points

3. Safety recommendations and learning points

Safety recommendations are proposed measures that should be implemented or considered with a view to improving road safety and preventing similar accidents in the future. The NSIA's safety recommendations are presented to the relevant authorities or organisations that have responsibility for and the opportunity to implement measures in areas where safety should be improved.

As a result of this investigation, the NSIA issues the following safety recommendations⁵:

Safety recommendation Road No 2025/13T

The accident involving a 16-year-old boy on a light motorcycle on county road FV 115 in Aurskog-Høland on 8 May 2024 occurred when the rider lost balance, crossed over the oncoming lane and struck the safety barrier posts on the outside curve. The investigation has shown that the position and design of the safety barrier contributed to the extent of the injuries being so severe that the rider died. The NSIA considers that the safety barrier does not necessarily provide sufficient visual guidance in the curve compared with directional signs, and that a motorcycle protection system could have been installed due to the run-off-road risk. The Norwegian Public Roads Administration's risk-curve model has identified a particularly high risk for approximately 111 curves on the county road network in Akershus. These have been mapped, and the county authority has been given access to the maps.

The Norwegian Safety Investigation Authority recommends that Akershus County Authority review high-risk curves with safety barriers on county roads with regard to motorcycle safety, and assess measures that could improve safety. This will provide a basis for prioritising safety measures.

⁵ The investigation report is submitted to the Ministry of Transport, which will take necessary measures to ensure that due consideration is given to the safety recommendations, cf. Regulations of 30 June 2005 No. 793 on Public Investigation and Notification of Traffic Accidents etc section 14. The Road Supervisory Authority is responsible for following up all safety recommendations for roads on behalf of the Ministry of Transport. This means, among other things, maintaining an overview of the follow-up of all the NSIA's safety recommendations in the road sector and recommending closure to the Ministry of Transport when a safety recommendation is considered satisfactorily followed up.

Safety recommendation Road No 2025/14T

Three of the four fatal accidents involving young people on light motorcycles in 2024 occurred because the riders chose speeds close to personal and physical limits. Figures from the Institute of Transport Economics (TØI) for 2022 show that the risk of being killed or seriously injured per kilometre travelled on a light motorcycle is very high. Research into brain development has shown that brain functions related to assessing risk, making judgements and responding to rapid and unexpected changes are not fully developed in teenagers. It is therefore concerning that young people are permitted to ride virtually unprotected on light motorcycles that can reach speeds of up to 120 km/h.

The Norwegian Safety Investigation Authority recommends that the Norwegian Public Roads Administration increase the age limit for light motorcycles, provided that the consequences have been thoroughly assessed, including how the risk may be shifted to other vehicle types and how this can be addressed.

Safety recommendation Road No 2025/15T

The investigations into fatal accidents involving young people on light motorcycles in 2024 show that cornering, overtaking and junctions present a high risk for young riders. Cornering at high speeds and small safety margins represent a critical risk area that is exacerbated by technical defects and deficiencies. Mechanical maintenance is a decisive factor for safely operating a light motorcycle. Young riders often have little experience of assessing the condition of chains, tyres and brakes. The use of protective equipment that shields the body's most vital areas (head, back, abdomen and chest) from impact is also highly significant for safety. These are topics that should be given more emphasis in training.

The Norwegian Safety Investigation Authority recommends that the Norwegian Public Roads Administration initiate work to revise learning objectives and/or content in the category A1 curriculum, ensuring that the findings and learning points from this investigation are included as part of the knowledge base.

Safety recommendation Road No 2025/16T

All riders involved in fatal accidents with young people on light motorcycles in 2024 were wearing motorcycle clothing in addition to the mandatory helmet. In three cases, the helmet failed. In one accident, the helmet's quick-release system opened, and in two accidents, the helmets failed to absorb and distribute the energy from the impact. In one case, the back protector in the motorcycle jacket did not provide sufficient protection. These findings underline the need for stricter requirements for motorcycle protective equipment. The investigation also raises concerns about helmet performance, particularly regarding protection against impacts to the back of the head.

The Norwegian Safety Investigation Authority recommends that the Norwegian Public Roads Administration initiate work to assess additional requirements for protective equipment that can provide increased protection for the parts of the body most critical for survival, both for riders and passengers.

Safety recommendation Road No 2025/17T

The investigations into fatal accidents involving young people on light motorcycles in 2024 indicate problems with mechanical maintenance. Three of the motorcycles – two of which were relatively new – had defects and deficiencies that affected stability and control: worn chains and sprockets, incorrectly mounted wheels, incorrect tyre pressure and degraded suspension. Young riders often have little experience of mechanical checks and maintenance, and parents or guardians have a difficult and unclear role in monitoring vehicle condition. Motorcycles are also exempt from the mandatory roadworthiness test ('EU test'), and spot checks by the Norwegian Public Roads Administration do not detect all mechanical defects and deficiencies. This emerges as a clear area for improvement.

The Norwegian Safety Investigation Authority recommends that the Norwegian Public Roads Administration initiate work to revise regulations and/or control mechanisms so that the mechanical condition of light motorcycles is monitored more closely.

Safety recommendation Road No 2025/18T

The investigations into fatal accidents involving young people on light motorcycles in 2024 indicate that road conditions contributed to several accidents. Hazardous curves with limited forward visibility contributed to three of the accidents. Unforgiving roadside terrain and safety barriers exacerbated the severity of injuries in two of the accidents. This demonstrates that infrastructure that is sufficient for cars can pose a lethal hazard to motorcyclists when the safety margins are small.

- A. The Norwegian Safety Investigation Authority recommends that the Norwegian Public Roads Administration review road sections with particularly high accident risk for motorcycles, and assess measures that can improve motorcycle safety on these sections. This will provide a basis for prioritising safety measures.
- B. The Norwegian Safety Investigation Authority recommends that Nye Veier AS review road sections with particularly high accident risk for motorcycles, and assess measures that can improve motorcycle safety on these sections. This will provide a basis for prioritising safety measures.
- C. The Norwegian Safety Investigation Authority recommends that county authorities review road sections with particularly high accident risk for motorcycles, and assess measures that can improve motorcycle safety on these sections. This will provide a basis for prioritising safety measures.

Safety recommendation Road No 2025/19T

The investigations into fatal accidents involving young people on light motorcycles in 2024 show that cornering, overtaking and junctions present a high risk for young riders. Cornering at high speeds and small safety margins represent a critical risk area that is exacerbated by technical defects and deficiencies. Mechanical maintenance is a decisive factor for safely operating a light motorcycle. Young riders often have little experience of assessing the condition of chains, tyres and brakes. In addition, the ability of the protective equipment to absorb and distribute energy has a direct impact on the outcome of accidents. These topics should be given more emphasis in the information efforts aimed at young motorcyclists and their parents or guardians by authorities and organisations with responsibility for motorcycle safety.

The Norwegian Safety Investigation Authority recommends that the Norwegian Public Roads Administration initiate an information campaign directed at motorcyclists – particularly young riders and their parents or guardians – incorporating the findings and learning points for road users from this thematic investigation.

Safety recommendation Road No 2025/20T

The investigations into fatal accidents involving young people on light motorcycles in 2024 show that cornering, overtaking and junctions present a high risk for young riders. Cornering at high speeds and small safety margins represent a critical risk area that is exacerbated by technical defects and deficiencies. Mechanical maintenance is a decisive factor for safely operating a light motorcycle. Young riders often have little experience of assessing the condition of chains, tyres and brakes. In addition, the ability of the protective equipment to absorb and distribute energy has a direct impact on the outcome of accidents. These topics should be given more emphasis in the information efforts aimed at young motorcyclists and their parents or guardians by authorities and organisations with responsibility for motorcycle safety.

- A. The Norwegian Safety Investigation Authority recommends that the Norwegian Motorcycle Union (NMCU) initiate information work specifically addressing the findings and learning points for road users in this thematic investigation.
- B. The Norwegian Safety Investigation Authority recommends that the Norwegian Council for Road Safety initiate information work specifically addressing the findings and learning points for road users in this thematic investigation.
- C. The Norwegian Safety Investigation Authority recommends that NAF MC initiate information work specifically addressing the findings and learning points for road users in this thematic investigation.
- D. The Norwegian Safety Investigation Authority recommends that Motorcycle Importers Association (MCF) initiate information work specifically addressing the findings and learning points for road users in this thematic investigation.
- E. The Norwegian Safety Investigation Authority recommends that Norsk MC-Forhandlerforening (MCF) (Motorcycle Importers Association) initiate information work specifically addressing the findings and learning points for road users in this thematic investigation.

The NSIA would like to highlight the following learning points for road users, parents and guardians, driving instructors and others as a result of the thematic investigation:

Learning points for road users

- The NSIA encourages **motorcyclists, parents and guardians, driving instructors** and others to regularly inspect the mechanical condition of motorcycles and perform necessary rectification and maintenance.
- The NSIA encourages **motorcyclists** to use service centres with motorcycle-specific technical expertise when servicing and maintenance is to be carried out by a garage.
- The NSIA encourages **motorcyclists** to adjust their speed to the traffic environment and maintain sufficient safety margins to detect hazards and react in time to avoid an accident.
- The NSIA encourages **motorcyclists** to use their brakes to reduce speed when approaching and riding through curves with limited sight lines, for as long as forward visibility is reduced. In most cases, it will be most appropriate to use the front brakes, or a combination of front and rear brakes.
- The NSIA encourages **motorcyclists** to use protective equipment that provides the greatest possible protection for the body's most vital areas (head, back, abdomen, and chest) from impact.
- The NSIA encourages **parents or guardians** to familiarise themselves with all the risk factors associated with young people riding light motorcycles.
- The NSIA encourages **car drivers** to pay attention to motorcyclists as a road-user group, and always to check mirrors and blind spots before turning or changing lanes.

Norwegian Safety Investigation Authority
Lillestrøm, 9 December 2025