Danish Accident Investigation Board

Annual Report 2009

June 2010

Contents

1. FOREWORD

The Accident Investigation Board for Civil Aviation and Railways (the Accident Investigation Board) is an independent institute under the Ministry of Transport. Its main task is to investigate breakdowns, accidents and incidents in the aviation and railways sectors in Denmark and also in the aviation sector in Greenland and the Faroe Islands. The Accident Investigation Board's investigations are not concerned with attributing guilt or responsibility, but are aimed solely at preventing breakdowns and accidents in the future.

Through this annual report, the Accident Investigation Board for Civil Aviation and Railways wishes to

- provide information on the year's investigation activities within the Accident Investigation Board;
- report on the implementation status of recommendations made by the Accident Investigation Board; and
- impart statistical knowledge concerning the breakdowns, accidents and incidents investigated by the Accident Investigation Board.

The annual report does not contain information about individual investigations. Reports and statements concerning individual breakdowns, accidents and incidents can be found on the Accident Investigation Board's website (www.havarikommissionen.dk).

Chapter 2 contains a brief introduction to the Accident Investigation Board and current benchmarks.

Chapter 3 provides an overview of the Accident Investigation Board's investigation activities in 2009. This is done through figures for received and closed cases, which give a highly simplified picture, since the investigations vary considerably in scope and form.

Chapter 4 presents an overview of the implementation status of the recommendations made by the Accident Investigation Board, which can be studied in greater depth in Annexes 1 and 2.

Chapter 5 presents the statistical figures, which we have chosen to place in Annexes 3 and 4.

Finally, Chapter 6 contains a brief outline of key economic information and other key activities from 2009.

2. THE ACCIDENT INVESTIGATION BOARD

The Accident Investigation Board for Civil Aviation and Railways (the Accident Investigation Board) is an independent institution under the Ministry of Transport. The Accident Investigation Board's duties to investigate aviation breakdowns and railway accidents are laid down in the Aviation Act (Consolidating Regulation No 731 of 21/06/2007) and the Railways Act (Consolidating Regulation No 969 of 08/10/2009).

The main task of the Accident Investigation Board is to investigate breakdowns and incidents in the aviation sector in Denmark, Greenland and the Faroe Islands and accidents and incidents in the railways sector in Denmark. Where Danish passengers or Danish-registered aircraft or trains are involved, the Accident Investigation Board can take part in investigations carried out by another country's investigation authorities.

The Accident Investigation Board's investigations are not concerned with attributing guilt or responsibility, but are aimed solely at preventing breakdowns and accidents in the future.

2.1. Mission and vision

The Accident Investigation Board works according to the following mission:

The mission of the Accident Investigation Board

The Accident Investigation Board shall, through impartial investigations, make recommendations with a view to preventing breakdowns, accidents and incidents in the railways and aviation sectors.

This role and duty, as expressed in the mission, are fundamental to the functioning of the Accident Investigation Board, and as a supplement to the mission, the Accident Investigation Board's vision serves as a guide for its activities.

The vision of the Accident Investigation Board

The Accident Investigation Board wants at all times:

- to ensure that its investigation activities live up to the professional and technological developments in the sector;
- to develop the workplace so that it is attractive to employees;
- to strengthen cooperation and dialogue with relevant national and international parties.

The vision has been revised since the last annual report, and we have therefore chosen to elaborate further upon it.

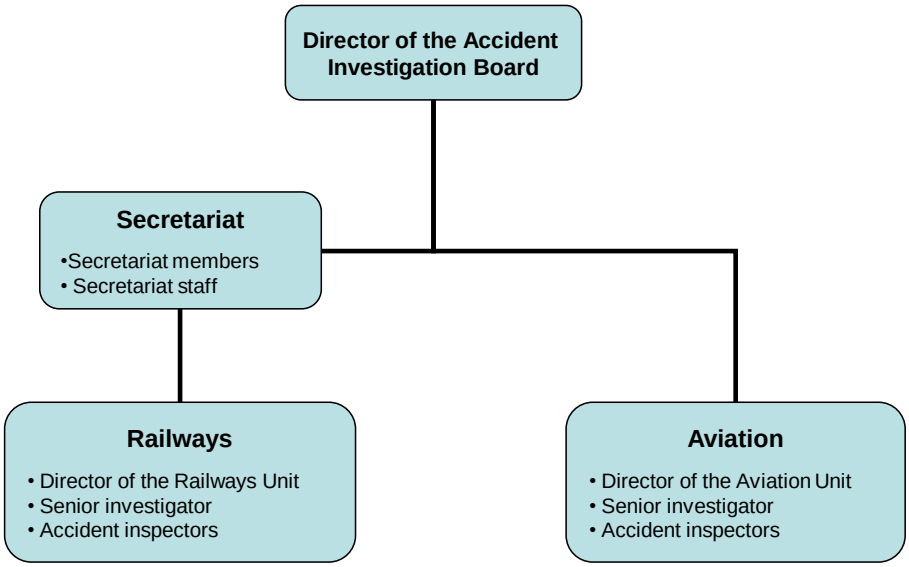
High-quality accident investigations that live up to the professional and technological developments in the sector are guaranteed first and foremost by a team of technically competent employees who, in pressure situations, can plan and lead activities, make competent decisions individually and jointly and then implement a qualified investigation. Technical facilities can support and in some cases be crucial to the chances of a successful investigation, and fixed processes and procedures can also be a prerequisite of an effective, structured and coordinated investigation involving a team.

An attractive workplace is conditioned by many factors – for example, tasks and challenges, possibilities for development, pay, climate of cooperation (colleagues and management), working environment (physical and mental), flexibility, freedom to act and the organisation's outward reputation. The Accident Investigation Board wishes to develop an attractive workplace within the given framework conditions in relation to duties, finance, external control, etc.

Strong cooperation with other parties is of vital importance to the Accident Investigation Board – partly to be able to carry out effective, coordinated investigations, and partly so that the results in the form of conclusions and recommendations are correctly received and understood and ultimately have the optimum effect. The Accident Investigation Board works at all times to strengthen cooperation and dialogue with relevant national and international parties.

2.2. Organisation of the Accident Investigation Board

The organisation of the Accident Investigation Board includes investigation units for both aviation and railways, as well as a director and secretariat.



The Director of the Aviation Unit is the Deputy Director of the Accident Investigation Board. The Accident Investigation Board normally has a total of 14 staff. In 2009, a position as operational accident inspector remained unfilled.

3. THE YEAR'S INVESTIGATION ACTIVITIES

3.1. The aviation sector

For the aviation sector, the AIB received 211 reports in 2009, in comparison with 237 in 2008.

All the reports were subject to a preliminary investigation. On this basis, 85 of the reports lay outside the AIB's remit for investigation.

The reports in 2009 that led to further investigation may be divided into the following categories: motorised aircraft/helicopters 80.5%, gliders/motorised gliders 11.8%, ultra-light aircraft 6.8% and balloons 0.9%. Of the reports involving motorised aircraft/helicopters, 12.3% were classified as air traffic incidents. The reports were classified such that 50.7% lay within commercial aviation and 49.3% within non-commercial aviation.

In 2009, for the aviation sector, 94 reports, statements and § 138 statements were published on accidents and incidents that took place in 2009 or in previous years. The § 138 statements include a brief description of the incident and in some cases an assessment. § 138 refers to § 138 of the Aviation Act. There can be two considerations behind the Aviation Unit deciding not to investigate an incident further. Either an investigation will not reveal any factors of major importance to flight safety, or the Unit does not have the necessary resources to carry out a further investigation of all reported incidents.

In 2009, the Aviation Unit assisted the accident investigation boards of other countries in 11 investigations. The Board's assistance has ended in one of the investigations.

3.2. The railways sector

In 2009, the Accident Investigation Board received 521 reports of accidents and incidents in the railways sector, compared with 496 in 2008.

The Accident Investigation Board assesses all the reports and decides whether a preliminary investigation should be carried out or whether the case may be closed immediately after it is registered. After any preliminary investigation, a decision is made on whether a proper investigation should be carried out, resulting in a statement or a report by the Accident Investigation Board.

In the autumn of 2008 the Accident Investigation Board changed its practice, so that it now produces a brief statement ('21Q statement') with the facts and any assessments available following preliminary investigations. This practice has brought about a rise in the number of preliminary investigations and statements published by the Accident Investigation Board. The introductory assessment led to 416 reports being rejected, after which 105 cases were forwarded for preliminary investigation.

3.3. Summary of cases in 2009

The table below summarises opened and closed cases in 2009. Developments over the past five years are discussed in greater detail in Chapters 3.4 and 3.5.

The table first gives the total number of reports received. Some reports are rejected following an introductory assessment, while the others (referred to in the table as 'Opened in 2009 after rejection') give rise to an introductory investigation.

The number of cases after introductory rejection is then divided into breakdowns/accidents and incidents.

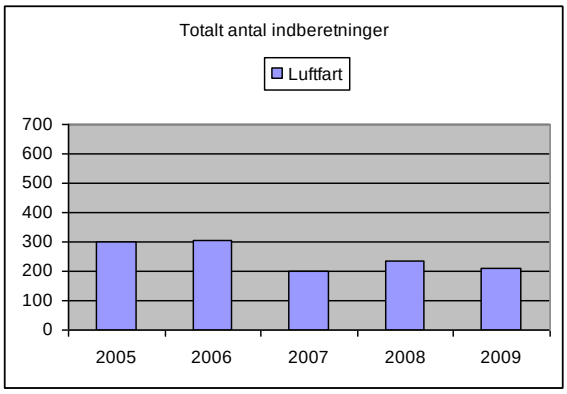
The cases closed in 2009 are divided according to whether or not they were closed within one year of the incident. This division expresses a common European objective to close cases within one year wherever possible.

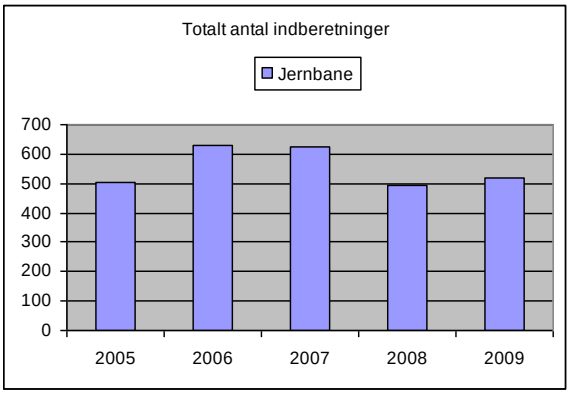
Finally, the table gives the number of unfinished cases at the beginning and end of 2009.

Accident Investigation Board	**2009**		
	Aviation		Railways
Opened cases in 2009			
Number of reports	211		521
Rejected after introductory assessment	85		416
Opened in 2009 after rejection	126		105
Reported breakdowns/accidents	49		13
Reported incidents	77		92
Closed cases in 2009			
Published statements and reports < 12 mths	90		79
Published statements and reports > 12 mths	4		24
Note: Statements and reports include simplified statements – §138 cases or §21Q cases			
Unfinished cases			
Unfinished cases as at 31/12-09	59		65
Unfinished cases as at 31/12-08	30		62

3.4. Developments in reports to the Accident Investigation Board

The diagrams below illustrate developments in the number of reports received by the Accident Investigation Board over the past five years by telephone and/or in writing.





Totalt antal indberetninger	Total number of reports
Luftfart	Aviation
Jernbane	Railways

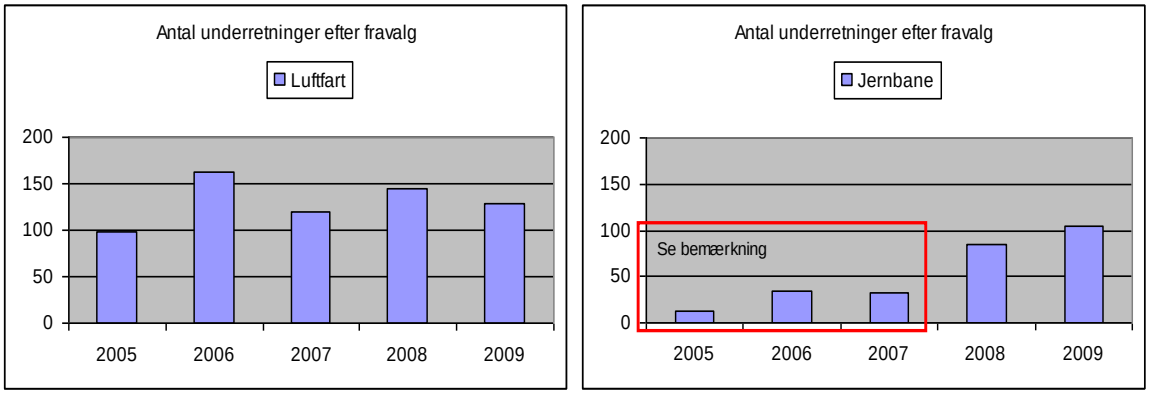
In the aviation sector, the Accident Investigation Board receives reports of accidents and incidents that are defined more specifically at international and national level. Other incidents in the aviation sector that require reporting are reported to the Civil Aviation Administration Denmark (CAA-DK), which thus receives reports of incidents continually (around 4,000 annually), which it assesses, records, considers and follows up.

For several years, an effort has been made to reduce the number of reports erroneously submitted to the Accident Investigation Board, which has brought the number of reports received down from around 300 to around 200.

In the railways sector, the Accident Investigation Board receives reports of all accidents and certain categories of incident, as there is no other institution to continually receive other incidents. This means that for the railways sector, the Accident Investigation Board receives a large number of reports, all of which are registered but a large number of which are immediately discarded, after which there is no further assessment, consideration or follow-up.

In both areas of investigation, all reports are initially assessed in order to decide whether the Accident Investigation Board should begin an immediate investigation or reject the report based on material received or additional material. For reports that are not rejected, after an introductory investigation the Accident Investigation Board will assess the scope of the investigation of the report from the point of view of its significance as regards safety.

The diagrams below illustrate developments in the number of reports after introductory rejection over the past five years.



Antal underretninger efter fravalg	Number of reports after rejection
Luftfart	Aviation
Jernbane	Railways
Se bemærkning	See comment

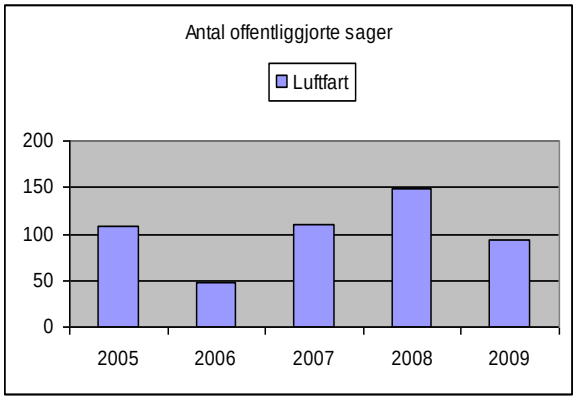
In the aviation sector, the number of reports remaining after rejection has in recent years fluctuated around 130 a year, without any visible tendency to develop.

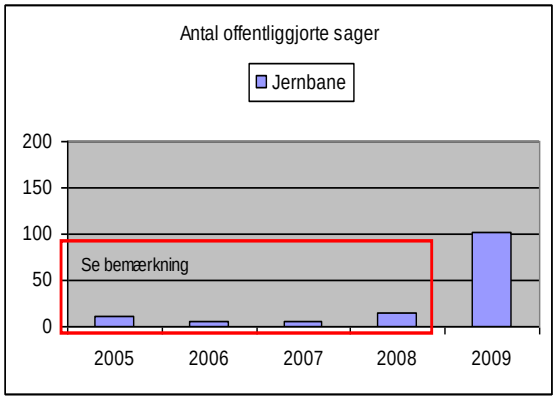
In the railways sector, there has been a marked change from 2007 to 2008. Until 2008, only reports and actual statements were published for the railways sector, which meant incidents were ruthlessly sorted at the introductory rejection stage, since it was only possible to carry out fewer investigations each year. From autumn 2008, in the railways sector – as is also traditionally the case in the aviation sector – simplified reports have been produced ('§ 21Q cases') of reports closed after an introductory investigation. This made it possible to carry out several introductory investigations with a short reporting method, leading to an increase in the publication of investigation results. The number of reports after rejection has therefore increased.

3.5. Developments in the closure and publication of cases

The Accident Investigation Board carries out fewer investigations, which are more extensive in terms of both the direct effort put into the investigation and also the level of cooperation and coordination. At the same time, a large and more stable number of medium-sized and small investigations are carried out. The number of reports and statements published therefore varies considerably, depending on what sort of strain the large investigations place on resources in a given year, and the number of accident inspectors employed in a given year can also affect the completion of cases.

The diagrams below illustrate the development in the number of published cases over the past five years (reports, statements and §138/§21Q cases (closed after a preliminary investigation)).





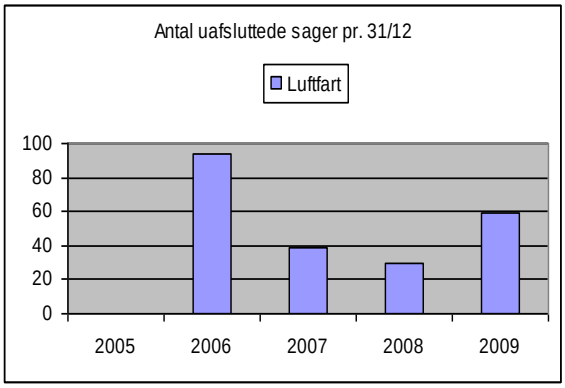
Antal offentliggjorte sager	Number of cases published
Luftfart	Aviation
Jernbane	Railways
Se bemærkning	See comment

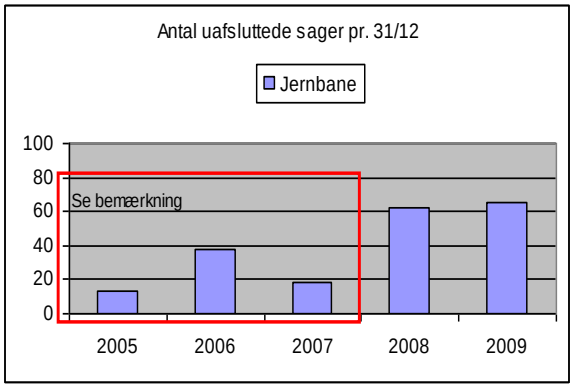
The background to the marked drop in the aviation sector in 2006 was a combination of two factors. An aviation accident inspector was ill for a long period, and there were a number of resource-draining investigation cases in Greenland and on the Faroe Islands. The period of long-term sickness ended with a vacant position, which remained empty until April 2010. At the end of 2007 the two Dash 8-Q400 accidents occurred, but in the period up until the accidents, the Aviation Unit handled far fewer resource-draining investigation cases, which is why the number of published cases was not affected. 2008 began with the two Dash 8-Q400 investigation cases placing a strain on resources, but ended with the handling of less resource-draining cases.

In the railways sector, there was a slight increase in 2008 and a sharp rise in 2009, owing to the aforementioned change, which means that in the railways sector, the Accident Investigation Board – as is also traditionally the case in the aviation sector – began producing simplified reports ('21Q cases') in the autumn of 2008, which also included collecting closed cases from previous years. This collection from previous years continued in 2010, and at the same time as the Railways Unit is introducing an appropriate level for preliminary investigations – and therefore simplified reports – the number is expected to stabilise at a lower level than the current one for 2009.

The Accident Investigation Board always has a number of open or ongoing cases. At any given time there will always be a significant quantity of simultaneously ongoing cases, since even medium-sized and small cases can run for longer periods given the nature of data collection and analysis and the holding of hearings, etc. Meanwhile, an increase in the number of open cases will generally give cause for concern.

The number of cases unfinished at the end of the year gives an idea of how many cases the Accident Investigation Board has open. The diagrams below illustrate the development in the number of unfinished cases at the end of the year over the past five years (as at 31 December each year).





Antal uafsluttede sager pr. 31/12	Number of unfinished cases as at 31/12
Luftfart	Aviation
Jernbane	Railways
Se bemærkning	See comment

In the aviation sector in particular, the development in the number of unfinished cases at the end of the year ties in nicely with the number of closed cases that particular year, which, moreover, should be the case, as the number of reports after introductory rejection is relatively stable over time.

For the railways sector, the diagram reflects, as far as the columns for 2008 and 2009 are concerned, the fact that reporting changed in 2008 with a reduced rejection of cases. The number of unfinished cases is expected to fall, but will be higher than the previous level. The reduction in the previous bulges – particularly in 2006 – is not reflected in the previous diagram concerning published cases, which is due to the fact that a large number of cases were closed earlier in the course of the investigation, as the possibility of simplified reporting was not used at that time.

4. RECOMMENDATIONS

As a result of the investigations carried out, the Accident Investigation Board can make recommendations with the aim of preventing future breakdowns and accidents. As an independent investigation unit, the Accident Investigation Board makes recommendations to the relevant safety authorities, whose task is to identify the necessary initiatives in conjunction with the organisations concerned and is authorised to implement these initiatives within the sectors.

In the aviation sector, the Civil Aviation Administration Denmark (CAA-DK) is the Danish safety authority, but because the aviation sector is highly international, more and more recommendations are currently being made to the EASA (European Aviation Safety Agency) at European or the ICAO (International Civil Aviation Organisation) at international level.

The railways sector is gradually being developed along more common European lines, but still has a primarily national focus, and the recommendations are therefore made to the National Rail Authority, which is the national safety authority.

4.1. Aviation

The table below summarises the status of recommendations in the aviation sector.

Recommendations, aviation sector

Recommendations published		**Implementation status of recommendations**			
		Implemented		**Open / stand-by**	
Year	**Total**		%		%
2006	**6**	**5**	83.3	**1**	16.7
2007	**5**	**2**	40.0	**3**	60
2008	**2**	**0**	0	**2**	100
2009	**2**	**2**	100	**0**	0
Total	**15**	**9**	55.8	**6**	44.2

An overview of open recommendations and recommendations implemented in 2009 within the aviation sector can be found in Annex 1.

4.2. Railways

The table below summarises the status of recommendations in the railways sector.

Recommendations, railways sector

Recommendations published		**Implementation status of recommendations**			
		Carried out/ closed		**Open**	
Year	**Total**		%		%
2004	**7**	**5**	72	**2**	28
2005	**10**	**10**	100	**0**	0
2006	**12**	**12**	100	**0**	0
2007	**11**	**6**	55	**5**	45
2008	**20**	**15**	75	**5**	25
2009	**9**	**6**	67	**3**	33
Total	**69**	**54**	78	**15**	22

For the railways sector, the 2008 annual report contains 31 open recommendations, and in 2009 the Accident Investigation Board made a total of 9 recommendations. Of these 40 recommendations, a total of 25 were implemented/closed in 2009, so that there are now 15 open

recommendations. This development occurred as part of a common process with the National Rail Authority with a view to having the older recommendations in particular clarified.

An overview of all open recommendations and recommendations carried out/closed in 2009 within the railways sector can be found in Annex 2.

5. STATISTICS OF REPORTED INCIDENTS

This year, the Accident Investigation Board chose to expand its annual report with statistical overviews concerning the breakdowns, accidents and incidents reported on by it in full or simplified form. The Accident Investigation Board is taking up a tradition from the aviation sector, where these statistical overviews have previously formed part of the annual reports.

In the aviation sector, a common European database (ECCAIRS) has been implemented in which all incidents are recorded with fairly extensive requirements on the recording of parameters related to the individual incident. This provides good opportunities for extraction for statistical use.

The statistical overviews in this annual report can profitably be read together with Civil Aviation Administration Denmark's annual reporting of the incidents reported to it. ('BL 8-10 Annual Report 20xx' for the year in question.)

The statistical overviews for the aviation sector (see Annex 3) are divided into accidents and incidents, which are in turn split into the categories scheduled flights, charter flights, taxi flights, training flights, other commercial flights, private flights, glider flights, ultra-light aircraft and balloons.

Within each of these groups, developments in accidents and incidents are presented and – to the extent that there is a reasonable data set from 2009 – it is illustrated how accidents/incidents are divided into 'phases of the flight' and 'factors that contributed to the accident/incident'.

In the railways sector, a common European (ERAIL) – corresponding to the one implemented for aviation – is currently being developed. With ERAIL's implementation, it is expected that a series of standardised parameters will henceforth be defined and thereafter systematically recorded, which will make more ample statistical information easily accessible.

The statistical overviews for the railways sector (see Annex 4) limit themselves to dividing accidents and incidents into level of seriousness, i.e. serious accident, accident or incident and dividing accidents/incidents into the categories derailment, fire/smoke formation, collision, level crossing accident, collision with person, passing of red light and other.

The statistical overviews for the railways sector can profitably be read together with the National Rail Authority's annual safety report ('Safety report for the railways 20xx'), which is based on annual reports from operators and infrastructure managers in Denmark. These reports also include those accidents and incidents that have been investigated by the Accident Investigation Board. A broader statistical description of the year's safety-related incidents is thus provided.

6. OTHER CONSIDERATIONS

6.1. Finance

The Accident Investigation Board's activities are financed under the Danish Finance Act. The table below gives key information on the Accident Investigation Board's funding and expenditure. The figures were compiled according to the cost-based accounting principle.

Funding and accounts for 2008 and 2009. DKK million.

	Accounts 2009	Funding 2009	Accounts 2008	Funding 2008
Salary expenses	9.9	9.4	9.0	8.9
Other operational it	4.9	5.6	4.0	5.1
Total	14.8	15.0	13.0	14.0

Note: in 2009, the Accident Investigation Board received a supplementary grant, DKK 1.1 million of which was set aside to cover salary expenses in 2010. This amount was left out of the above information, to give a truer picture of the finances in 2009.

6.2. Skills development

It is essential for the Accident Investigation Board constantly to maintain and expand the competences of both individual employees and the team within investigative, technical, organisational and human situations associated with the aviation and railways sectors. The Accident Investigation Board therefore prioritises financial resources to allow individual employees to take part in training activities at an internationally recognised level in continuation of MUS and conclusions in the specialist units.

In the Aviation Unit, particular attention was paid to complying with the findings made by Eurocontrol during its audit of the Accident Investigation Board in 2005, for which the Aviation Unit strengthened its investigative skills in the area of ATC (Air Traffic Control). At the same time, the Unit focused on meeting the results contract objective that all inspectors become internationally certified aviation accident inspectors. Both objectives were met.

As for the Railways Unit, the three-week course in 'Fundamentals of Accident Investigation' at Cranfield University will be used as a foundation course for accident inspectors, and in the autumn of 2009 the unit's office manager attended this.

The Accident Investigation Board's new director attended the 'Fundamentals of Accident Investigation' course at Cranfield University, and the entire organisation attended seminars on strengthening communication – see also next point.

6.3. Communication

In the autumn of 2009, the Accident Investigation Board prioritised working towards strengthening its outward profile. This included two days of intensive media training for all, the drafting of a press and communications policy, correspondence courses focusing on technical reports and the drafting of cooperation agreements with central parties. This also resulted in plans to modernise the website and focus on communication when publishing reports, statements, etc., to be implemented in the coming period.

7. ANNEXES

1. Overview of recommendations for the aviation sector
2. Overview of recommendations for the railways sector
3. Statistics for the aviation sector
4. Statistics for the railways sector

ANNEX 1

STATUS OF RECOMMENDATIONS IN THE AVIATION SECTOR

The following status applies to recommendations in the aviation sector in June 2010.

<table>
<tr><td colspan="2">REC 01-99 Closed
The Danish Civil Aviation Administration (CAA-DK) should assess whether the differences in wording concerning the same subjects in BL 2-2 and the KZ & Vintage Aircraft Club Construction Handbook respectively are acceptable</td></tr>
<tr><td>Synopsis:
Flight accident with Polliwagen experimental model in Avnø Fjord 27 April 1998 (AIB 12/98).
The flight during which the accident took place was a test flight with a view to issuing an experimental airworthiness certificate, where the pilot was supposed to carry out a flutter test. During the flight, the canopy appears to have separated from the aircraft. Whilst still flying, the pilot lost control of the aircraft, after which it hit the surface of the water.</td><td>Response to recommendation:
In its letter of 6 October 2004, the CAA-DK replied that it accepts the recommendation made. The CAA-DK and the KZ & Vintage Aircraft Club have, in several respects, agreed on derogations from BL 2-2. The CAA-DK will assess the differences between the BL and the Construction Handbook during the forthcoming review of BL 2-2.

Section C of the Construction Handbook was approved by the CAA-DK, so no significant changes are anticipated.

The CAA-DK has published a new BL 2-2, valid from 1 April 2010.</td></tr>
<tr><td colspan="2">Comments:
Based on the published BL 2-2, the AIB has closed the recommendation.</td></tr>
</table>

<table>
<tr><td colspan="2">REC 01-2002 Closed
The CAA-DK and the Danish Ultralight Flying Association should assess the extent of and procedures for ultralight aircraft inspections</td></tr>
<tr><td>Synopsis:
Flight incident with ultralight 9-143 at Birkholm Harbour on 20 June 2000 (AIB 27/00).
The aircraft started flying from Sydfyn/Tåsinge Airfield (EKST) at approx. 18:45.
Shortly before the time of the accident, the aircraft passed south of Birkholm on a south-westerly course, at low altitude. When the aircraft was south-southwest of Birkholm Harbour, it began to bank to the right over the harbour area near Birkholm. Whilst doing so, the aircraft lost altitude, and subsequently crashed into the pier west of the harbour entrance at position N54° 55.626’ E010° 29.936’.
Both of those on board died in the accident, and the aircraft was destroyed.
The accident took place in broad daylight and under visual meteorological conditions (VMC).
Summary
At low altitude, the aircraft banked so far to the right that the aircraft lost its lift and stalled. Since the aircraft was flying low (at approx. 50 metres altitude), it was not high enough for the pilot to be able to regain control of the aircraft and take it up again in time before it crashed.</td><td>Response to recommendation:
In its letter of 6 October 2004, the CAA-DK replied that it accepts the recommendation made.

The CAA-DK will take rec. 01-2002 into account during its current review of BL 9-6 (Provisions on ultralight aircraft) and the handbook of the Danish Ultralight Flying Association. It is expected that the review of BL 9-6 will be published in mid-2005.

In its letter of 21 October 2009, the CAA-DK replied that BL 9-6 and the handbook of the Danish Ultralight Flying Association had been revised to take account of the problem raised by the recommendation.</td></tr>
<tr><td colspan="2">Comments:
Based on the CAA-DK’s response of 21 October 2009, the AIB has closed the recommendation.</td></tr>
</table>

REC 02-2002	***Closed***
The Danish Ultralight Flying Association should impress on owners/users of ultralight aircraft that any changes carried out by owners/users that require a new flying licence must be reported to the Danish Ultralight Flying Association so that the changes can be inspected and a new flying licence issued.	
Synopsis: **Flight incident with ultralight 9-143 at Birkholm Harbour on 20 June 2000 (AIB 27/00).** See synopsis under REC 01-2002	**Response to recommendation:** The AIB has received the response from the Danish Ultralight Flying Association via the CAA-DK. The revision of BL 9-6 and the handbook of the Danish Ultralight Flying Association covered the problem raised by the recommendation (ref. see REC 01-2002).
Comments: Based on the response from the CAA-DK and the Danish Ultralight Flying Association of 21 October 2009, the AIB has closed the recommendation.	

REC 03-2002	***Closed***
The Danish Ultralight Flying Association should impress on owners/users of ultralight aircraft the importance of applying good craftsmanship practice in the maintenance of the aircraft, and ensure that they do so.	
Synopsis: **Flight incident with ultralight 9-143 at Birkholm Harbour on 20 June 2000 (AIB 27/00).** See synopsis under REC 01-2002	**Response to recommendation:** The AIB has received the response from the Danish Ultralight Flying Association via the CAA-DK. The revision of BL 9-6 and the handbook of the Danish Ultralight Flying Association covered the problem raised by the recommendation (ref. see REC 01-2002).
Comments: Based on the response from the CAA-DK and the Danish Ultralight Flying Association of 21 October 2009, the AIB has closed the recommendation.	

<table>
<tr><td colspan="2">REC 04-2006 Closed
The Danish Civil Aviation Administration, in collaboration with the Danish Glider Union, should draw up a procedure for improved monitoring of primary flight controls after intervention and after assembly, and daily inspections.</td></tr>
<tr><td>Synopsis:
Flight accident with OY-MRX on 29 May 2005

The accident occurred during a winch launch on runway 26. After take-off, at approx.
50 m altitude, the pilot felt that the aircraft could not attain the normal flight position for a winch launch. The pilot then chose to release the wire. He was then unable to feel any rudder impact, so he chose a field for landing. Upon landing, which took place with a powerful sideslip, the aircraft ground looped. The pilot has explained that after ‘landing’ he tested the rudder to see if it was working properly, together with another person who was there, and this did not give any grounds for comment. He then did a positive check on the ailerons, which did not feel normal. Upon testing, a ‘crack’ was discovered, but it could not be located. The pilot has explained that he was sure that all the aileron connections had been assembled correctly.</td><td>Response to recommendation:
In its letter of 25 June 2009, the CAA-DK informed the AIB that the handbook of the Danish Glider Union had been revised on 12 May 2009 to accommodate the recommendation.</td></tr>
<tr><td colspan="2">Comments:
Based on the CAA-DK’s response of 25 June 2009, the AIB has closed the recommendation.</td></tr>
</table>

REC 06-2006 **Open** The Danish Aircraft Accident Board recommends that the Danish Civil Aviation Administration should consider more suitable taxiway designators and more clear taxiways signs.	
Synopsis: **Air traffic incident on 8 September 2003 at Copenhagen Airport, Kastrup** Aircraft A was on a flight plan from Copenhagen (EKCH) to Wick (EGPC). Aircraft B was on a flight plan from EKCH to Kangerlussuaq (BGSF). Aircraft A was parked at the eastern parking area and received a taxi instruction to the holding position at runway 04R via taxiways U, T and V and to hold short of taxiway B. Aircraft B was taxiing to holding position at runway 04R. Aircraft B received instruction to line up and was cleared for take-off. When aircraft A arrived at the intersection between taxiways T, V1, V2 and V there were 3 separate taxiways all starting with the name V (V, V1 and V2). The flight crew in aircraft A chose by mistake taxiway V2 and crossed the holding position marking for runway 22L/04R. Kastrup Ground instructed aircraft A to hold its position. At the same time Kastrup Ground called Kastrup Tower (using the intercom) ordering Tower to stop all aircraft movement on runway 04R. The Tower instructed aircraft B to hold its position. Kastrup Ground guided aircraft A back via taxiway V2 and further on to taxiway V.	**Response to recommendation:**
Comments: The AIB is awaiting the CAA-DK's response to the recommendation.	

REC 01-2007	***Closed***
The Accident Investigation Board, Denmark makes the following recommendations to the European Aviation Safety Agency (EASA): Ensure that the aircraft manufacturer change the 'Emer Doors, L and R Wing Slide' advisory light message level from advisory to warning and revises the cockpit crew checklist procedure (the Boeing 757 Operations Manual/Quick Reference Handbook) to include and ensure an immediate flight crew action.	
Synopsis: A few minutes after the descent was initiated from FL370 (37000 ft) the left hand off-wing escape slide separated from the aircraft. The aircraft landed in EKCH and it was confirmed that the left off-wing escape slide was missing. The left stabilizer was damaged by the slide when it separated from the aircraft.	**Response to recommendation:** In its letter of 4 February 2009, the EASA stated that they disagree with the recommendation. The reason is that the EASA and constructor have assessed the classification of the note (advisory) and do not feel this is critical enough to increase the note from advisory to warning. The note merely indicates that the wing slide door was not closed and locked, not that the over-wing emergency slide was deployed.
Comments: Based on the EASA's response of 4 February 2009, the AIB has closed the recommendation.	

REC 02-2007	***Closed***
The Accident Investigation Board, Denmark makes the following recommendations to the European Aviation Safety Agency (EASA): Ensure that the aircraft manufacturer evaluates the possibility of a physical or visual verification of the locking of the off-wing escape slide carrier and door lock system.	
Synopsis: See synopsis under REC 01-2007	**Response to recommendation:** In its letter of 4 February 2009, the EASA stated that they agree with the recommendation. Based on the incident, the constructor has issued a Service Bulletin (SB 757-25-0298), which will be increased to an Airworthiness Directive.
Comments: Based on the EASA's response of 4 February 2009, the AIB has closed the recommendation.	

REC 03-2007	**Open**
The Accident Investigation Board, Denmark makes the following recommendations to the European Aviation Safety Agency (EASA): Ensure that the aircraft manufacturer revises the work task card to ensure proper locking of the off-wing escape slide system.	
Synopsis: See synopsis under REC 01-2007	**Response to recommendation:**
Comments: The AIB is awaiting the EASA's response to the recommendation.	

REC 04-2007 **Open**	
The AIB recommends that the Danish Civil Aviation Administration with a background in the incident undertake a risk assessment of the physical, technical and operative conditions at Copenhagen Airport, Kastrup (EKCH) and assess whether measures need to be taken and arrange for changes to be made where required.	
Synopsis: Aircraft A landed on runway 22L without permission, while aircraft B was pulling onto runway 22L via taxiway V2 (intersection). As aircraft B passed, the horizontal distance from aircraft A's right wing tip to aircraft B was approx. 10-15 m, and aircraft A's radio altitude (RA) was approx. 16 feet. The traffic load at the time of the incident was low to medium. The incident occurred in the dark and under visual meteorological conditions (VMC).	**Response to recommendation:**
Comments: The AIB is awaiting the CAA-DK's response to the recommendation.	

REC 05-2007 **Open**	
The AIB recommends that the Danish Civil Aviation Administration, possibly in collaboration with the Danish Parachute Association, draft additional procedures if it is considering also applying ST 16/91 to tandem jumps. Alternatively, that it introduce into the existing ST 16/91 that tandem jumps are not permitted.	
Synopsis: The flight during which the accident took place was a sightseeing tour from Aars Airfield. The pilot took off from runway 29 with five passengers on board. After a tour over the area around Aars, the pilot began a standard approach to runway 29 at Aars Airfield. The pilot has explained that the last part of the flight was undertaken with full flaps. While flaring out, the aircraft became very tail-heavy and was about to stall. The pilot increased the thrust, trying to force the nose down. This attempt was unsuccessful, and the pilot then chose to go around, applying full thrust. At this point the aircraft's nose was very high, and the aircraft would not accelerate. The control column was pushed all the way forward, which had the desired effect. Around 100 metres from the end of the runway and at an altitude of two to three metres, the pilot realised that he was going to have to make a forced landing. The thrust was reduced to idling speed, and the aircraft	**Response to recommendation:**

'flopped'. The aircraft hit the edge of the runway and came to a halt on the grass. The pilot has also explained that tail of the aircraft was the first thing to come into contact with the runway.	
Comments: The AIB is awaiting the CAA-DK's response to the recommendation.	

REC 01-2008 **Open** The Accident Investigation Board recommends that the Danish Glider Union introduce a requirement that a radio check be carried out between the glider and the tow-plane prior to take-off if the glider has installed approved radio equipment.	
Synopsis: The accident occurred in connection with a towed start in an easterly direction. During take-off, the tow-plane pilot noticed that the angle of climb was abnormally low, and saw in his rear-view mirror both that the glider was not positioned correctly for a towed start, and also that the air brakes were not in and locked, but were partly out. After repeated unsuccessful radio calls to say that the air brakes were open, the tow-plane pilot opted to release the cable, which he did at a height of around 30-50 m, after having signalled an abortive start to the glider by moving the tow-plane's rudder from side to side. Immediately after being released, the glider turned to the left. While turning, and roughly while passing a northerly course, the angle of banking increased, after which the glider lost height and hit the ground with its left wing-tip. The glider then tipped over on its left wing-tip and hit the ground with its nose in an almost vertical position. The aircraft then jumped back into the air and landed backwards so that the rearmost section of the aircraft hit the earthwork that forms the new approach road of Arnborg Gliding Centre.	**Response to recommendation:** The recommendation was discussed at a meeting with the Danish Glider Union on 9 February 2009. The Danish Glider Union does not agree with the Accident Investigation Board's recommendation as written, as it believes it will not be able to be implemented under different conditions.
Comments: The Danish Glider Union and the AIB are engaged in reciprocal discussions about the content of the recommendation.	

<table>
<tr><td colspan="2">REC 02-2008 Open
The Accident Investigation Board recommends that the Danish Civil Aviation Administration investigate the possibility of installing meteorological measuring equipment at/near Vagar Airport, which is able to provide a better guarantee of a correct determination of the existing (and expected) degree of turbulence and ‘Wind Shear’ on flight paths to and from Vagar Airport as well as at/near the airport – and also re-assess the positioning and applicability of the ‘Skeid’ anemometer.</td></tr>
<tr><td>Synopsis:
The incident occurred in connection with a scheduled flight from Vagar airport (EKVG) to Copenhagen Airport, Kastrup (EKCH). The flight was a Pilot in Command under Supervision (PICUS) flight, with the candidate pilot sitting in the left-hand seat, and the pilot in the right-hand seat. The pilot in the right-hand seat was the Pilot Flying (PF).
Owing to the wind conditions at EKVG, the planned departure at 08.15 was put back to 08.55. The passengers boarded the aircraft early, so that the aircraft would be ready for departure once the wind direction was more favourable to taking off.
When the wind began to turn from the south-west and back westerly, the pilots decided to start the engines and move to the starting position on runway 31. It was the pilots’ experience that when passing comparable weather systems, the wind direction will back westerly and remain in a westerly direction. At 08.51.26, Vagar AFIS reported the wind conditions to be 250° 19 knots pushing 37 knots. Both pilots understood the wind direction to be 260° and decided to initiate take-off.
Take-off was effected with flaps deployed at flap position 30° and maximum take-off thrust. The take-off run and initial climb were perceived to be normal. The landing gear was retracted, the flaps closed to flap position 18°, and the pilots began to establish the aircraft on LLZ (outbound) from runway 13. The turbulence was deemed to be light to moderate.
Shortly thereafter, it was the pilots’ experience that the aircraft flew into an area of heavy turbulence.
The aircraft’s cruising speed dropped unpremeditatedly to a speed below V2 for flaps in flap position 18°. The pilots corrected for this by lowering the nose to build up speed. During this manoeuvre the speed increased suddenly and unpremeditatedly to a speed above the maximum speed for flaps open in flap position 18°. The pilots reported the turbulence conditions to Vagar AFIS</td><td>Response to recommendation:</td></tr>
</table>

and then decided to continue the flight to EKCH. The aircraft was inspected at EKCH. The inspection did not give rise to any comments.	
Comments: The AIB is awaiting the CAA-DK's response to the recommendation.	

REC 01-2009 ***Closed*** The Accident Investigation Board, Denmark makes the following recommendations to the European Aviation Safety Agency (EASA): It is recommended to review the design, the certification and the maintenance programme of the MLG retraction/extension actuator and rod end.	
Synopsis: The accident flight was a scheduled domestic flight from Copenhagen Airport, Kastrup (EKCH) to Aalborg Airport (EKYT). During the approach to EKYT the flight crew selected the landing gear down and did not get the appropriate down and locked indication for the right main landing gear (MLG). After a number of unsuccessful attempts to achieve the appropriate down and lock indication the flight crew declared an emergency. Approximately two seconds after touchdown on runway 26R the right MLG collapsed.	**Response to recommendation:** In its letter of 13 October 2009, the EASA stated that it agreed with the recommendation. An Airworthiness Directive (CF-2007-20) was subsequently issued which satisfies the recommendation.
Comments: Based on the EASA's response of 13 October 2009, the AIB has closed the recommendation.	

REC 02-2009 ***Closed*** The Accident Investigation Board, Denmark makes the following recommendations to the European Aviation Safety Agency (EASA): It is recommended to review the landing gear abnormal and emergency procedures contained in the manufacturer's Airplane Flight Manual and Quick Reference Handbook.	
Synopsis: See REC-01-2009	**Response to recommendation:** In its letter of 13 October 2009, the EASA stated that it agreed with the recommendation. The constructor's Airplane Flight Manual and Quick Reference Handbook were revised on 9 October 2008 and the recommendation has therefore been fulfilled.
Comments: Based on the EASA's response of 13 October 2009, the AIB has closed the recommendation.	

ANNEX 2

STATUS OF RECOMMENDATIONS IN THE RAILWAYS SECTOR

Explanation of the terminology used by the Accident Investigation Board:

***Open**: All cases where it has not been decided to implement, or where implementation has been begun but not completed.*
***Carried out:** All cases where a recommendation on the basis of the National Rail Authority's feedback on 'compliance' is deemed to have been essentially fulfilled.*
***Closed**: Closed covers cases where the recommendation has not been directly followed, but where initiatives have been implemented and the National Rail Authority as safety authority has assessed the initiatives as satisfactory, and will not take any further action.*
***Rejected:** the National Rail Authority or other authority to which the recommendation was made has refused to undertake something.*

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2004 PUBLISHED

Head-on collision at Holstebro 01.06.2004.	
A departing regional train collided head-on with an IC train that was arriving. In the collision, which occurred at low speed, five people were injured. The regional train had not had the departure signal, but the signal that blocked or allowed access could not be seen from the point of departure due to platform equipment. The signal has since been moved.	
R3 22.12.2004	Closed
R3. It is recommended that crossing signals linked to the main signals are given directional readings, at least on sections without train protection facilities, or that compliance with what is shown by the main signal is otherwise ensured.	
Response to recommendation: The National Rail Authority explained that an ATC train stopping system has been installed on the stretch in question The National Rail Authority explained that this principle (directional readings) will be used in connection with implementing Rail Net Denmark's signal programme. The National Rail Authority does not expect to take any further action.	Comments: The general solution forms part of the Signal Programme, which has been politically adopted and initiated.
R5 22.12.2004	Open
It is recommended that Rail Net Denmark ensures (and the National Rail Authority follows up) that the signal commissioning work started after the collision at Kølkær is completed and that the case be closed with a report on the rectifications performed, which shall then be assessed by the National Rail Authority.	
Response to recommendation: The National Rail Authority explained that certain	Comments: The Accident Investigation Board is awaiting

signals were not used.	final compliance.
R6 22.12.2004	Carried out
It is recommended that Rail Net Denmark (possibly through sector rules) tighten up monitoring by ensuring that the necessary signal commissioning is carried out when buildings, signs, etc., are erected on platforms or elsewhere near tracks, where this may have an impact on signal visibility.	
Response to recommendation: On 07.02.2008, Rail Net Denmark informed the National Rail Authority that the provisions in the construction provisions were considered adequate, and that a procedure had been established for handling applications for buildings etc. near areas belonging to Rail Net Denmark. The National Rail Authority considers the recommendations to have been implemented.	Comments:
R7 22.12.2004	Open
It is recommended that Rail Net Denmark harmonises safety equipment objectives and the reading or operational options thereof, and that it sets out guidelines for the circumstances under which and for how long there may be a difference between the actual objectives and reading or operation.	
Response to recommendation: Based on feedback from Rail Net Denmark on 07.02.2008 the National Rail Authority explained that agreement had been reached in a number of cases, but that there was still no feedback on Herning and Holstebro and these were still open.	Comments: The Accident Investigation Board is awaiting final compliance.

2005 published

None

2006 published

Train and car collided at crossing 120 Skagen 21.01.2006	
A North Jutland Railways train collided with a private car at a crossing near a halt. The driver of the car was killed in the collision. Among other things, the accident was a consequence of the crossing's construction and operating surface, which were different from the 'usual' crossing facilities.	
R1 09.08.2006	Carried out
The AIB recommends that the National Rail Authority make the Danish Road Directorate and North Jutland Railways change the way the crossing operates, so as to comply with the current rules in Article 11 of the Safety Regulations relating to passage at automatically protected crossings.	
Response to recommendation: 19.12.2008: The National Rail Authority has explained that the position of signal 11.5 has been changed so that it is now placed after the stopping point and the SR has been fulfilled.	Comments:

Speed restriction corrigenda, and speed not reduced regardless of information. 28.07.2006	
A review of the 'corrigenda' to speed restrictions showed that at least 21 trains had passed both a speed restriction that had erroneously been lifted in 'corrigendum to speed restrictions' No 2256 and a speed restriction that should have been lifted ('corrigendum to speed restriction' 2220). The system used to provide information on speed restrictions, changes to them and how they are indicated (including by ATC) was antiquated and incapable of dealing with the very large number of speed restrictions and changes to them caused by problems with track maintenance conditions.	
R1 06.11.2006	Closed
Since the very number of speed restrictions and, not least, the number of 'Adjustments to speed restrictions' has reached a level that cannot be handled responsibly, in terms of safety, with the current procedures, an up-to-date system should be set up so that an engine driver can have a fully updated schedule giving all the permanent and temporary speed restrictions.	
Response to recommendation: Rail Net Denmark has subsequently modified the procedure for speed restrictions so that they are issued daily and not, as was previously the case, for one week at a time. Consequently, only isolated corrections need to be made during the period of validity of a single day. The safety procedures and rules in the SR (Safety Regulations) have also been reviewed and updated. A recommendation from the AIB for an integrated up-to-date 'running order' containing the train's plan with permanent and temporary speed restrictions is not felt to be immediately practicable. The National Rail Authority considers the chosen solution to be satisfactory, and therefore considers the recommendations to have been implemented.	Comments:
R2 06.11.2006	Carried out
Procedures should be introduced before the end of 2006 to ensure that trains travelling on tracks with (a) speed restriction(s) which are not yet marked in accordance with Article 52(3.2) of the Safety Regulations can pass such speed restrictions without any risk of exceeding the permitted speed. It should also be ensured that the necessary rolling stock and manpower are available for marking immediately when speed restrictions are put in place at short notice.	
Response to recommendation: Rail Net Denmark has subsequently modified the procedure for speed restrictions so that they are issued daily and not, as was previously the case, for one week at a time. Consequently, only isolated corrections need to be made during the period of validity of a single day. The safety procedures and rules in the SR (Safety Regulations) have also been reviewed and updated. The National Rail Authority considers the steps taken to be sufficient to ensure that speed restrictions which are not yet marked correctly can be passed without any risk of exceeding the permitted speed	Comments:

R3 06.11.2006	Carried out
All of Rail Net Denmark's procedures for introducing, marking, notifying of and abolishing temporary speed restrictions should be analysed with a view to demonstrating that they are sufficient and clear, so that it will not be possible for trains to pass areas with speed restrictions at excessive speed, and, where necessary, to adapt the procedures to achieve this objective. It should also be assessed whether the procedures should distinguish between conditions on stretches with and without ATC.	
Response to recommendation: After carrying out an analysis / risk assessment in conjunction with the operators involved, Rail Net Denmark has modified the procedure for speed restrictions so that they are issued daily and not, as was previously the case, for one week at a time. Consequently, only isolated corrections need to be made during the period of validity of a single day. The safety procedures and rules in the SR (Safety Regulations) have also been reviewed and updated. The National Rail Authority considers the recommendations to have been implemented.	Comments:

2007 published

Train and lorry collided at Pederstrup 27.02.2006	
In connection with the fact that a lorry with trailer had to pass over a crossing and at the same time negotiate a sharp left turn in the road into an entrance, the signalling equipment was activated and one barrier came down onto the roof of the lorry's trailer. The driver of the lorry tried to warn the train, but a collision could not be avoided. The crossing was not connected to a train stopping system. When the entrance was created, there had been no assessment of what types of articulated vehicle could cope with the entrance's geometry. The train driver's observation of a solid yellow crossing signal was diverted by the positive F-signal, and also by the fact that he was talking on his mobile phone while driving.	
R1 23.01.2007	Closed
The AIB recommends that the National Rail Authority analyse whether it is justifiable to allow drivers to use mobile phones when they should be observing signals and/or other safety-related driving functions – and that measures are then taken in line with the results of the analysis.	
Response to recommendation: In accordance with the recommendation, the National Rail Authority questioned all railway companies on their internal rules on the use of mobile phones in manned driver's cabs. The National Rail Authority had not recorded safety incidents in which the use of mobile phones was a contributory cause. Against this background, the National Rail Authority concluded that the use of mobile phones as regulated in the SR was justifiable. In addition, industry rules normally have even tighter instructions.	Comments:

R2 23.01.2007	Closed
The AIB recommends that the National Rail Authority analyse the benefits to railway safety of crossings on stretches with train stopping systems generally being incorporated into these systems – and that measures are taken in line with the results of the National Rail Authority's analysis.	
Response to recommendation: Extending the train stopping systems used on stretches to also include automatic level-crossings is felt not to be financially justifiable in relation to the number of accidents. In addition, it has just been decided in connection with establishing the train stopping system not to incorporate crossings into the ATC system for the reasons outlined above. The National Rail Authority explained that this principle (directional readings) will be used in connection with implementing Rail Net Denmark's signal programme. The National Rail Authority does not expect to take any further action.	Comments: The general solution forms part of the Signal Programme, which has been politically adopted and initiated.

Doors swung open at light 63 on 14.09.2006	
The doors swung open on the front unit as a goods train was passing. A fault in the door leaf / door system indicates that maintenance, adjustments and repairs were not of sufficient quality to prevent the incident.	
R1 16.03.2007	Open
The National Rail Authority should have train operators who use carriages and units of different types review and assess the safety level of the door functions, safety mechanisms and monitoring systems.	
Response to recommendation: The National Rail Authority claims that the content of the two recommendations is covered by the individual railway company's liability for maintenance, etc., in accordance with the certificate of release to service and does not want to take further steps in addition to an order issued in connection with this case and its inspection plan.	Comments: An evaluation is under way
R2 16.03.2007	Open
In connection with the results of the above, the National Rail Authority should assess the need for general requirements to safeguard against trains travelling with open doors.	
Response to recommendation: The content of the two recommendations is covered by the individual railway company's liability for maintenance, etc., in accordance with the certificate of release to service and does not want to take further steps in addition to an order issued in connection with this case and its inspection plan	Comments: An evaluation is under way

Train hit small lorry at Svendstrup (J) on 08.09.2006	
Collision between train and lorry on crossing. The lorry had been caught between the barriers. The driver had abandoned the lorry as the train was approaching. In all probability the accident could have been avoided with a detector system on the crossing.	
R1 16.04 2007	Carried out
The AIB recommends that the National Rail Authority ensure that detector monitoring forms part of the risk assessment of crossing safety and on this basis consider whether detector monitoring can form part of the requirement specifications for crossings, including the requirements for conversion/modernisation.	
Response to recommendation: In connection with the approvals procedure, the National Rail Authority will in future assess in each individual case whether detector monitoring should form part of the risk analysis / requirement specifications. The National Rail Authority has closed the case.	Comments:

Collision between car and train near Rindsholm on 20.04.2006	
Shortly before the train was due to pass over the crossing, a private car drove out in front of the train. A collision could not be avoided, and the car was hit. Several factors either had or could have had an influence on the occurrence of the accident and sequence of events. A lack of signs and visibility, including the fact that in many cases the gate was open without being in use, thereby allowing cars to pass over the crossing without stopping. In addition, the escape time had been calculated from crossings with single tracks and this was a twin-track crossing.	
R1 19.04.2007	Open
The AIB recommends that the National Rail Authority ensure that the 'Rules for securing railway crossings open to general traffic' are updated and completed.	
Response to recommendation: Rail Net Denmark has secured the specific crossing in accordance with the applicable provisions – including reducing the speed to 75 km/h, straightened out the configuration of the ground, etc., and carried out a risk assessment. The updating of the 'Rules for securing railway crossings open to general traffic' is expected to be completed by September 2010. The National Rail Authority considers the recommendations to have been satisfied.	Comments: Expected to be satisfied with the publication of the 'Rules for securing railway crossings open to general traffic'
R2 19.04.2007	Open
The AIB recommends that the National Rail Authority assess whether it is justifiable from a safety viewpoint to allow crossings secured with a gate on stretches with a speed in excess of 75 km/h and that measures are taken in line with the results of the assessment.	
Response to recommendation: Rail Net Denmark has secured the specific crossing – including reducing the speed to 75 km/h through Rindsholm. The assessment of speeds at crossings secured with a gate has been undertaken in the work on the	Comments: Expected to be satisfied with the publication of the 'Rules for securing railway crossings open to general traffic'

'Rules for securing railway crossings open to general traffic', which is expected to be completed by September 2010. The National Rail Authority considers the recommendations to have been satisfied.	

R3 19.04.2007	Open
The AIB recommends that the National Rail Authority assess whether it is justifiable to allow crossings that cross more than one track to be secured with gates, and that measures are taken in line with the results of the assessment.	
Response to recommendation: Rail Net Denmark has secured the specific crossing in accordance with the applicable provisions – including carrying out a satisfactory risk assessment. The assessment of conditions for allowing crossings that cross more than one track to be secured with gates has been undertaken in the work on the 'Rules for securing railway crossings open to general traffic', which is expected to be completed by September 2010. The National Rail Authority considers the recommendations to have been satisfied.	Comments: Expected to be satisfied with the publication of the 'Rules for securing railway crossings open to general traffic'

Pram trapped in door as train departed Bording 25.07.2006	
As the train was pulling out, a pram (with child) became trapped in the train's back door. After the train had travelled approx. 1400 m and reached a speed of approx. 100 km/h, the pram fell from the train. Several factors influenced the occurrence of the incident and the sequence of events, including the light conditions and the train driver's line of sight, as well as the fact that the unit was not fitted with a traction blocker or a similar device for preventing the train from setting off with open doors.	
R1 14.12.2007	Carried out
The AIB recommends that in connection with the issuing of certificates of release to service for rolling stock for use for passenger transport, the National Rail Authority require that the stock's outer doors be monitored and secured so that the train cannot set off and drive if the doors are open.	
Response to recommendation: The National Rail Authority states that in connection with the issuing of certificates of release to service for rolling stock for use for passenger transport, the stock is now required to contain a so-called immobiliser, i.e. a mechanism that only allows the train to move off if all the doors are correctly closed.	Comments:
R2 14.12.2007	Carried out
The AIB recommends that the National Rail Authority have an assessment carried out of the conditions for the one-man operation of passenger trains, including the link between instruction (procedures) and aids (e.g. platform monitors) and the quality thereof, and that the National Rail Authority then ensure that any changes are implemented in accordance with the results of these assessments.	

Response to recommendation: The National Rail Authority states that it will in future ensure that in conjunction with the future need for driving with trains operated by one man on new stretches, the individual railway companies present the National Rail Authority with an actual procedure for such a switch to one-man operation, including a risk assessment of the actual driving..	Comments:

Passing of VI stop signal at Åmarken station on 08.07.2007	
A VI signal was passed in the 'stop' position. Single-track operation was in place due to track work. The visibility of the VI signal did not meet the applicable requirements, and there was no 400 m distance marker.	
R1 14.12.2007	Closed
The AIB recommends that the National Rail Authority, in collaboration with the operator, DSB suburban trains, assess whether both training and in-service training in accordance with external signals and single-track operation (driving on left track) on suburban tracks is sufficient to ensure that such driving can be performed without an increased risk in relation to normal electronic speed control driving.	
Response to recommendation: The National Rail Authority states that it was not possible to assess the basic training together with DSB suburban trains because the training takes place on the basis of a public contract. It also states that DSB suburban trains supplements the basic training at a later stage. The National Rail Authority also states that DSB suburban trains has reported on continuous assessment and the adjustment of in-service training. The National Rail Authority believes that this together with the flexible theming of in-service training is sufficient to ensure the right competences also in connection with driving on the left track and considers the recommendation to have been satisfied.	Comments:

2008 published

Fire in work vehicle in Great Belt tunnel 05.06.2006	
While passing through the Great Belt tunnel with wagons and three work vehicles (placed in front, in the middle and at the rear), the breakdown of the engine in the vehicle at the rear caused a fire to start. This spread to the supply of approx. 1.2 aluthermic welding powder – thermite – resulting in an extremely fierce conflagration.	
R5 30.05.2008	Carried out
The National Rail Agency is having the rules for driving with work vehicles revised, and rules/guidelines are being drafted for driving under all circumstances, including driving with a train-like make-up and the transport of e.g. gas cylinders.	
Response to recommendation: (a) Rail Net Denmark has revised the rules for	Comments: The Accident Investigation Board points out that

driving with work vehicles (e.g. a revision of SR §71 came into force on 30.03.2009). (b) The National Rail Authority has published a regulation on work driving (BJ 5-08), which regulates/clarifies driving under all circumstances, including train-like driving.	the rules drafted by the National Rail Authority and/or Rail Net Denmark are deemed by the National Rail Authority to cover the problematic situation.

R7 30.05.2008	Open
Together with infrastructure managers, railway operators, politicians and the emergency management agency, the National Rail Authority is having an analysis carried out of the alarm procedures in connection with accidents in railway tunnels.	
Response to recommendation: The case was discussed at the meeting in the Incident Management Group for the Great Belt Link on 11.11.2008. During the meeting, Rail Net Denmark reported on the ongoing process to simplify alarm procedures, inasmuch as simplification is desirable, with as few scenarios as possible in the alarm phase. The alarm decision itself should be taken early by the personnel at the site of the damage, which is stressed in the training. Weekly tests are carried out, involving all parties: SRO operators, RFC Roskilde and the alarm centre in Slagelse. Rail Net Denmark also emphasised the link between this recommendation and the training activities that had been implemented in connection with other recommendations.	Comments: The Accident Investigation Board is awaiting the National Rail Authority's feedback on status.
R8 30.05.2008	Carried out
The National Rail Authority is having Sund & Bælt, together with the emergency management agency, assess the conditions surrounding a strategy for tunnel ventilation in an accident situation.	
Response to recommendation: The case was discussed at the meeting in the Incident Management Group on 11.11.2008. In connection with the setting up of the SRO system, tactical assessments were taken as a basis that were prepared prior to being put into service by an interdisciplinary group consisting of infrastructure managers, the emergency management agency, Sund & Bælt, and others. The representatives present at the meeting from the authorities and agencies involved announced that it was still felt that the existing ventilation strategy was the most appropriate in relation to the original efforts by the emergency management agency. Against this background, the National Rail Authority considers the recommendation to have been implemented.	Comments:
R9 30.05.2008	Carried out
The National Rail Authority is having infrastructure managers, together with the emergency management agency, assess instructions for driving with rescue vehicles in the vicinity of tunnels.	
Response to recommendation: Based on the incident, the National Rail Authority has revised SIN (Ø), instruction 1.5 together with the emergency management agency, and continues to maintain that the instruction is perfectly adequate.	Comments:

<table>
<tr><td colspan="2">Collision north of Lyngby station 14.02.2005</td></tr>
<tr><td colspan="2">After passing a stop signal, an S-train collided with the rear of an S-train that was at a standstill just outside Lyngby station’s northern I-signal. Visibility was reduced due to snow on the signal’s lanterns and low light in the red lanterns. The speed at the time of the collision was approx. 67 km/h.</td></tr>
<tr><td>R1 20.06.2008</td><td>Open</td></tr>
<tr><td colspan="2">Against the background of the serious errors and shortcomings that have been established in relation to AM 5450 (lanterns, technique, documentation),the National Rail Authority must ensure that other or equivalent errors and shortcomings do not occur on Rail Net Denmark’s other infrastructure, e.g. by selecting together with Rail Net Denmark a representative number of Rail Net Denmark’s safety equipment (both station safety equipment and rail safety equipment) and scrutinising these.</td></tr>
<tr><td>Response to recommendation:
Since the accident, Rail Net Denmark has altered its organisation and practice such that not only is a representative number chosen, but all the actual safety equipment is visited and documentation examined once a year. The National Rail Authority sees to it that Rail Net Denmark performs these operations and takes action if faults are found in the safety equipment. This supervision is part of the National Rail Authority’s supervision of Rail Net Denmark’s safety approval. Regarding the situation in question, Rail Net Denmark and the National Rail Authority have assessed that this was an isolated, one-off incident. The National Rail Authority considers the recommendation to have been implemented.</td><td>Comments:
An evaluation is under way.
.</td></tr>
<tr><td>R2 20.06.2008</td><td>Closed</td></tr>
<tr><td colspan="2">Taking as their starting point the ever-decreasing number of S-train stretches that are not equipped with train protection facilities (permanent electronic speed control) and the difference in safety level on stretches with simplified electronic speed control and electronic speed control, the National Rail Authority together with Rail Net Denmark must have a risk assessment carried out of the Lyngby-Holte-Hillerød stretch with a view to establishing a suitable level of safety on this stretch.
Until the deliberations on this matter have been concluded, such steps should be taken that during normal operation, trains can always stop within a safe distance.</td></tr>
<tr><td>Response to recommendation:
The work on additional protection is at an advanced stage, inasmuch as a decision in principle has been taken to change the set-up of the signals such that greater safe distances are created on the stretch in question until an entirely new signal system is introduced in line with Rail Net Denmark’s new signal programme. A decision in principle was taken in 2009, and the changed set-up is being introduced. The National Rail Authority considers the recommendation to have been implemented.</td><td>Comments:</td></tr>
</table>

R3 20.06.2008	Carried out
a): Rail Net Denmark's collection of standards for safety equipment should be made to reflect the correct responsible party (job titles, organisational units) in accordance with the organisation's current structure, and it must be ensured that any changes to the safety organisation are always reflected in the safety-critical standard materials. b) Rail Net Denmark must draft procedures to ensure continuous supervision of the operation of safety-critical equipment independently of the party responsible within the system for the operation and maintenance of the equipment	
Response to recommendation: Work has begun on both points. Rail Net Denmark has taken an initiative to revise several VN drawings (a.1) Rail Net Denmark shall adapt its original VN drawings to reflect the current structure of the safety organisation. (a.2) The National Rail Authority does not find the proposed line of action appropriate, inasmuch as the situation indicated in relation to clarity concerning the safety organisation must be apparent from Rail Net Denmark's safety management system. The National Rail Authority will therefore not take any further action as a direct follow-up to part of the recommendation. Point (b) has a closer connection with Rail Net Denmark's safety approval, which was implemented in 2008. The National Rail Authority considers the recommendation to have been implemented.	Comments:
R4 20.06.2008	Closed
Because distance markers, especially when driving using electronic speed control or ATC monitoring, are extremely important to driving and braking in relation to restrictive signals and requirements as to their visibility, the National Rail Authority must have provisions on distance markers with regard to visibility requirements and the size of the markers laid down / revised and ensure that these are included in the Signal Commission's inspections.	
Response to recommendation: For the stretch in question, this will be an integral part of the change in signal set-up referred to under point 2. The National Rail Authority has also re-assessed the provisions, and does not believe there is need for further initiatives. The National Rail Authority considers the recommendation to have been implemented.	Comments:

R5 20.06.2008	Carried out
Against the background of current driving and perceptions of driving patterns (expectations of signals, braking based on distance markers), the National Rail Authority must assess training, in-service training and the ongoing follow-up of train drivers' driving behaviour. The safety benefits of introducing the use of simulators in both basic and in-service training to build up sufficient experience in those safety-related situations that do not commonly occur or cannot be trained for in normal operation must be included in the assessment.	
Response to recommendation: The National Rail Authority has taken steps to discuss with the parties concerned [sector, Ministry] the possibilities of using simulators in connection with the basic training or in-service training of train drivers. This process includes assessing the safety benefits of introducing the use of simulators. The National Rail Authority carries out both ongoing supervision of basic training, in-service training and companies' internal supervision (e.g. driver's cab visits). The National Rail Authority considers the recommendation to have been implemented.	Comments: Against the background of the initiated assessment and clarification of the possibilities for using simulators and the National Rail Authority's ongoing supervision, the recommendation is deemed to have been implemented.

Derailment near Ellebjerg on blocked track 18.07.2007	
Three sleeper transport wagons were derailed while shunting on blocked track near the old Ellebjerg station on the S-track to Køge. The track (left track Copenhagen H – Åmarken) was being reconditioned.	
R1 17.07.2008	Open
Together with Rail Net Denmark, the National Rail Authority shall ensure that the rules and procedures for preparing tracks for mechanical reconditioning make allowance for rail safety, and that this is also established in relation to subcontractors.	
Response to recommendation: (a) The National Rail Authority states that conditions surrounding mechanical track work will form part of the work on the 'Standard Plan 2010' with which Rail Net Denmark is busy in the spring of 2010 (b) The National Rail Authority states that Rail Net Denmark's handling of subcontractors is documented in the safety management system which Rail Net Denmark had certified after December 2009 and that inspection of this was covered by the National Rail Authority's auditing.	Comments: The Accident Investigation Board is awaiting the implementation of the activities under (a).

R2 17.07.2008	Open
The National Rail Authority shall guarantee the requirements on the training of personnel used to recondition track – including subcontractors' personnel – including monitoring the rail safety conditions beyond those relating purely to track reconditioning.	
Response to recommendation: The National Rail Authority states that 4 competence rail standards in the spring of 2010 are now being approved by the National Rail Authority for use in a pilot trial and that final approval will follow the assessment of the pilot trial	Comments: The Accident Investigation Board is awaiting the trials and approval process.

Two S-trains set off without signal Copenhagen H 15.08.2007	
In connection with track work, trains were driving with external signals instead of electronic speed control. At the crossing across from the station area this led to an incident with a near-miss.	
R1 14.08.2008	Carried out
Together with Rail Net Denmark, the National Rail Authority shall assess the possibilities of ensuring driving with electronic speed control in this form of driving.	
Response to recommendation: The National Rail Authority states that Rail Net Denmark has been contacted to…… 'clarify the possibilities of ensuring driving with electronic speed control in this form of driving on the left track'. Rail Net Denmark has told the National Rail Authority that it is technically possible to introduce electronic speed control train routes at Ch from tracks 9-10 towards the current U-signal. Rail Net Denmark also points out that it will be possible to introduce simplified electronic speed control in connection with left track signals.	Comments: The recommended assessment has been carried out, and technical initiatives (electronic speed control loops at both ends of tracks 9-10 at Ch) have been introduced.

Train derailed while leaving Ringsted 04.11.2007	
While leaving Ringsted on track 4, the front wagon – the 'A' unit – was derailed at a set of points with a pinion that could not be sheared [uopskærlig?]. After setting off, the train had stopped because of door closure problems in such a way that the locomotive personnel could not see that the signal for the train had been withdrawn, at the same time as the information in the ATC equipment that authorised the departure was maintained and seen in the driver's cab signal.	
R1 22.09.2008	Open
Rail Net Denmark is analysing the uncovered form of interplay between safety equipment and ATC more closely and will identify those points where similar dangerous situations could occur, and then assess what technical measures can be taken to counter the risks uncovered.	
Response to recommendation: Together with Rail Net Denmark, the National Rail Authority has dealt with and assessed the incident, and it is agreed that the instructor solution is	Comments: An evaluation is under way

perfectly satisfactory.	

2009 published

Collision with combine harvester at crossing near Borris 28.07.2008	
A combine harvester was hit at a crossing and was thrown into a field, where it landed on its roof and burst into flames.	
R1 08.01.2009	Open
Together with the Danish Road Directorate, the National Rail Authority shall carry out an assessment of the proprieties of driving across railways with extremely slow vehicles, and shall assess the possibilities of creating high visibility for vehicles with highly positioned driving positions of road signals on crossings.	
Response to recommendation: With the assistance of the Road Directorate, the National Rail Authority has assessed the specific cross, but has not yet assessed the general problem	Comments: The Accident Investigation Board is waiting.
R2 08.01.2009	Open
In conjunction with the Road Directorate, the National Rail Authority shall assess the reconditioning tempo from unmanned to manned crossings, if necessary with stoppages, including assessing the rules for equipping railways with unmanned and/or manned crossing facilities.	
Response to recommendation: The National Rail Authority has not carried out the assessment of the reconditioning tempo and stoppages	Comments: The Accident Investigation Board is waiting.

Overhead power line collapsed. Copenhagen H 12.06.2007	
While arriving into Copenhagen H, the pantograph on a trainset brought down an overhead power line, such that the power line was brought down and parts of the mounting collapsed, injuring waiting passengers	
R1 08.01.2009	Closed
The National Rail Authority shall have the possibilities of protecting passengers (more effectively) against the collapse of parts of overhead power lines on platforms investigated.	
Response to recommendation: The National Rail Authority is unaware of other incidents in Denmark or abroad that render plausible the fact that there is a general risk for passengers while standing on platforms, and the National Rail Authority is unaware of any protective measures that have been implemented. The National Rail Authority does not feel that there is any need for further investigation, and therefore considers the case closed.	Comments:

Fires in engine room of letter MF (IC3) 10.10.2009 and 22.10.2009	
Several fires occurred in the engine room of MF stock (IC3) as a result of leaks in fuel oil hoses that occurred after remotorising.	
R1 10.11.2009	Open
It is recommended that the DSB, together with the supplier of the remotorising programme, carry out an assessment of whether all hose and cable ducts are in order.	
Response to recommendation: As is apparent from a letter to the Accident Investigation Board dated 04.03.2010, an inspection of the specific hoses and cables has been carried out on all engines.	Comments: An evaluation is under way, among other things of the barriers erected and concerning design and construction / the quality of workmanship of the hose and cable ducts.

Unintentional coupling of metro trainset 21.10.2006	
Two metro trains were unintentionally coupled together in the deployment area, which occurred during a further two incidents within a year. A key factor in this was software error, which did not take account of the actual physical conditions.	
R1 11.11.2009	Carried out
Software versions developed against the background of established railway safety errors shall be validated and approved with particular attention to railway safety initiatives prior to being put into service.	
Response to recommendation: The National Rail Authority states that all changes of relevance to safety are validated and verified in accordance with the Metro Company's 'change management' procedures described in the company's O&M Configuration Management manuals, including specific assessment of SW changes. In addition, the aforementioned changes are approved by the National Rail Authority following the appointment of independent assessors. The National Rail Authority will follow up the case through the regular supervision with the Metro Company, which is one of the National Rail Authority's tasks, and thereafter will consider the case closed.	Comments:

Welding hanger derailed with cracked axle. Odense 15.04.2007	
A 10 welding hanger was derailed at a set of points because of a cracked axle and was caused by 2 key factors – partly the axle's construction and partly the wagon's simple construction, which made it unsuitable for heavy loads.	
R1 22.12.2009	Closed
The National Rail Authority should ensure through safety approvals, type approvals, certificates of release to service and supervision that there is correspondence between construction, conditions of use, maintenance, etc. for the use of infrastructure managers' and contractors' vehicles that can travel on rails.	
Response to recommendation: The National Rail Authority finds that the recommendation is worded extremely broadly. The National Rail Authority checks through regular supervision that operators observe general conditions, i.e. the limits listed in the vehicle's handbook, any type approval or certificate of release to service, but generally not operator-specific conditions, (e.g. from declarations of conformity) which are a matter for the railway company and infrastructure manager. Stock that is facto approved in connection with the division of the DSB as of 1.08.1996 is currently in the process of being recorded centrally in a vehicle register, which will increase the possibility of overview, control and inspection. The National Rail Authority approves changes to these vehicles and these are brought into line with other vehicles supervised by the National Rail Authority. The National Rail Authority considers the recommendation to have been implemented.	Comments:

Tanker wagon derailed in Odense 29.11.2005	
While shunting in the goods yard in Odense, a tanker wagon with RID goods for Kommunekemi was derailed at a set of points in poor condition.	
R1 22.12.2009	Carried out
The infrastructure manager shall keep points and tracks in shunting areas in appropriate condition, to minimise the risk of derailment.	
Response to recommendation: It is the assessment of the National Rail Authority that the conditions have changed significantly (new goods operator, expired safety certificate, expanded track area) since the incident, and that since the incident the infrastructure manager has improved the management of points and tracks in shunting areas that are controlled through changed processes as the basis for renewed safety approval. As part of its tasks involving regular inspection of and safety approvals for railway companies, the National Rail Authority will follow up the case with the aforementioned recommendation. The National Rail Authority considers the recommendation to have been implemented.	Comments:
R2 22.12.2009	Carried out
The infrastructure manager shall ensure that all rail safety initiatives described in circulars, notes, etc. are received by all relevant addressees.	
Response to recommendation: It is the assessment of the National Rail Authority that the conditions have changed significantly (new goods operator, expired safety certificate, expanded track area) since the incident with improved management through changed processes as the basis for renewed safety approval. As part of its tasks involving regular inspection of and safety approvals for railway companies, the National Rail Authority will follow up the case with the aforementioned recommendation. The National Rail Authority considers the recommendation to have been implemented.	Comments:

Bridge displaced at Allerød station. Hit by train. 20.07.2005	
While working on a tunnel under the tracks at Allerød station, a bridge element hit a temporary bridge support such that this was displaced and was hit by an S-train.	
R1 22.12.2009	Closed
Together with contractors, infrastructure managers shall newly establish the following in rail safety plans or equivalent plans: • That there is just one plan for each piece of work, and that all relevant plans are delivered to those personnel who are responsible for more than one piece of work, • That a given rail safety plan is drawn up on the correct basis, for example that an excavation permit or other equivalent permit is provided, • When work may be carried out at the same time as trains are moving around, • Who should be in situ to carry out supervision, if required, • What action should be taken in situations where something goes wrong.	
Response to recommendation: The infrastructure manager is responsible for work on tracks being planned and carried out in a safe and responsible manner. It is the assessment of the National Rail Authority that the conditions have changed significantly since the incident with improved handling of safety when working on tracks, including safety plans, which have formed the basis of renewed safety approval by the infrastructure manager. The National Rail Authority has followed this process at the infrastructure manager through supervision and approvals. The National Rail Authority carries out random supervision to ensure that the individual rail safety plans take account of job-specific conditions that may affect safety, including the conditions referred to in the recommendation and so that the companies themselves supervise compliance with the rail safety plan's design and implementation to a sufficient degree. The National Rail Authority is following up this situation in connection with regular supervision of the companies and considers the case closed with regard to the Accident Investigation Board.	Comments:

ANNEX 3

STATISTICS FOR THE AVIATION SECTOR

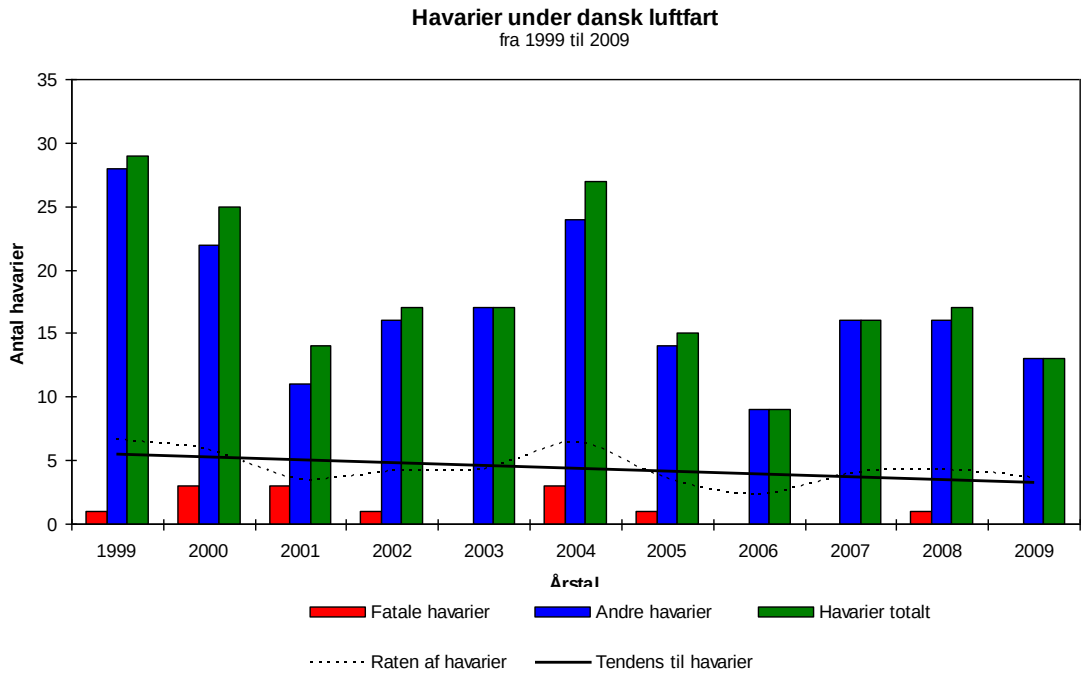
The statistics for aviation accidents and incidents take into account the aviation accidents and incidents reported for 2009 involving Danish and foreign-registered aircraft which the Aviation Unit is obliged to investigate.

The statistics are produced so as to give an overview of the number of aviation accidents and incidents within Danish aviation as a whole, as well as the number of aviation accidents and incidents within the six main areas into which Danish aviation is divided. These six areas are: scheduled, charter, taxi, training, other commercial and private flights. The recreational aviation areas of glider flights, ultralight and balloon flights are not included in Danish aviation, but are listed in separate statistics for each recreational area.

For 2009, a schema has been drawn up showing aviation accidents and incidents involving foreign-registered aircraft in Danish territory, where the Accident Investigation Board has been in charge of an investigation. NB! Rate and tendency are not calculated for foreign-registered aircraft.

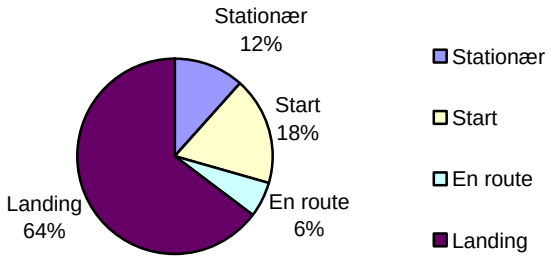
The statistics also show how the rate of aviation accidents and incidents changes from year to year. The rate is calculated as the number of aviation accidents and incidents per 100 000 flying hours. Based on the calculated rate, the tendency towards aviation accidents and incidents is calculated using the least squares method. Tendency gives a picture of a rising or falling occurrence of aviation accidents or incidents from the number of reported flying hours.

The number of flying hours within Danish aviation is reported to Civil Aviation Administration Denmark. The statistics on aviation accidents and incidents divided according to the flight's purpose and phase are drawn up in line with the classification of the ICAO ADREP Manual. It should be noted that the total number of aviation accidents and incidents is not comparable with the total for accident/incident type or the total for factors, inasmuch as an accident or incident can cover several types, and several factors can influence the same accident/incident.



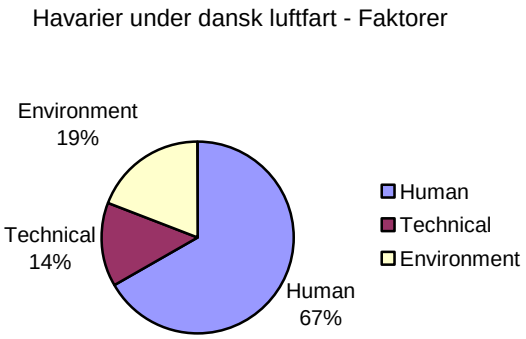
Havarier under dansk luftfart fra 1999 til 2009	Accidents in Danish aviation from 1999 to 2009
Antal havarier	Number of accidents
Årstal	Year
Fatale havarier	Fatal accidents
Andre havarier	Other accidents
Havarier totalt	Total accidents
Raten af havarier	Rate of accidents
Tendens til havarier	Tendency towards accidents

Havarier under dansk luftfart - Flyvningens fase

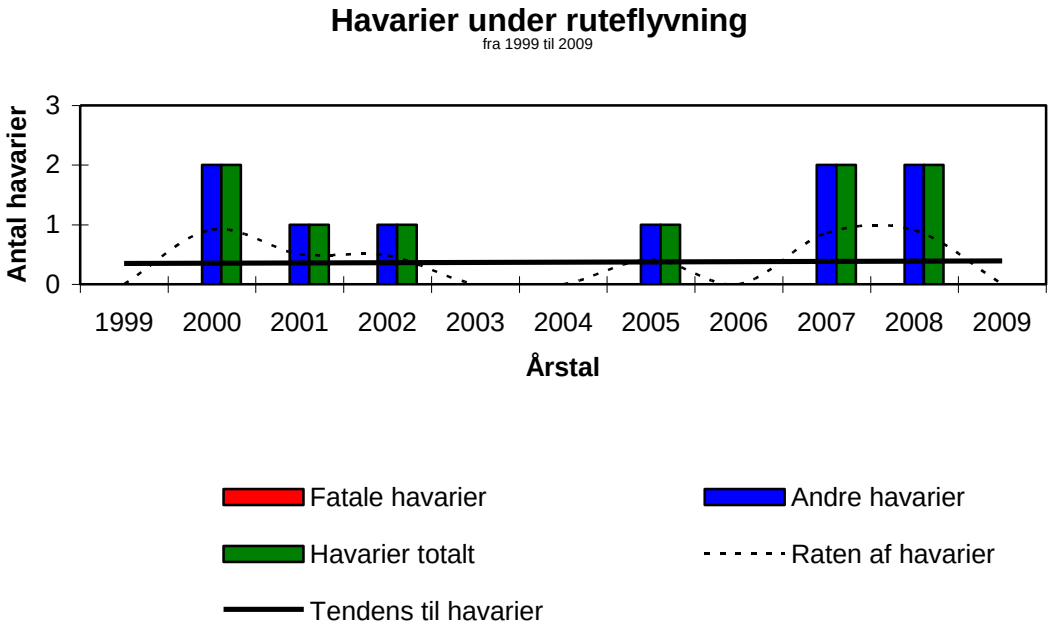


Havarier under dansk luftfart – Flyvningens fase	Accidents in Danish aviation – Flight phase
Stationær	Stationary

Start	Take-off

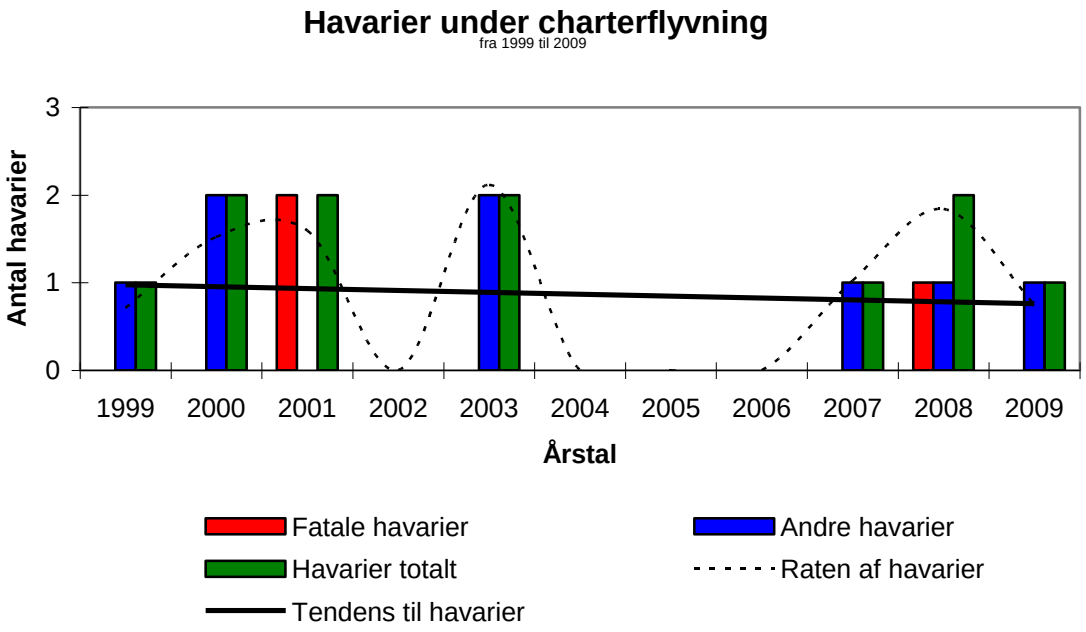


Havarier under dansk luftfart – Faktorer	Accidents in Danish aviation – Factors



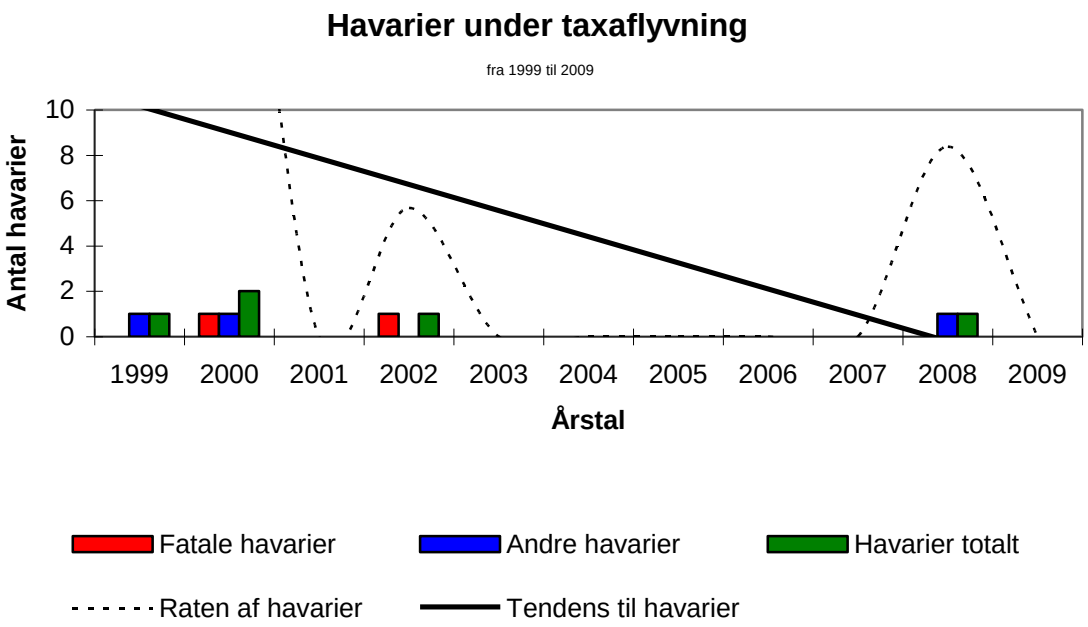
Havarier under ruteflyvning fra 1999 til 2009	Accidents on scheduled flights from 1999 to 2009
Antal havarier	Number of accidents
Årstal	Year
Fatale havarier	Fatal accidents
Andre havarier	Other accidents
Havarier totalt	Total accidents
Raten af havarier	Rate of accidents
Tendens til havarier	Tendency towards accidents

No accidents occurred on scheduled flights in 2009, which is why the flight phases and contributory factors are not given.



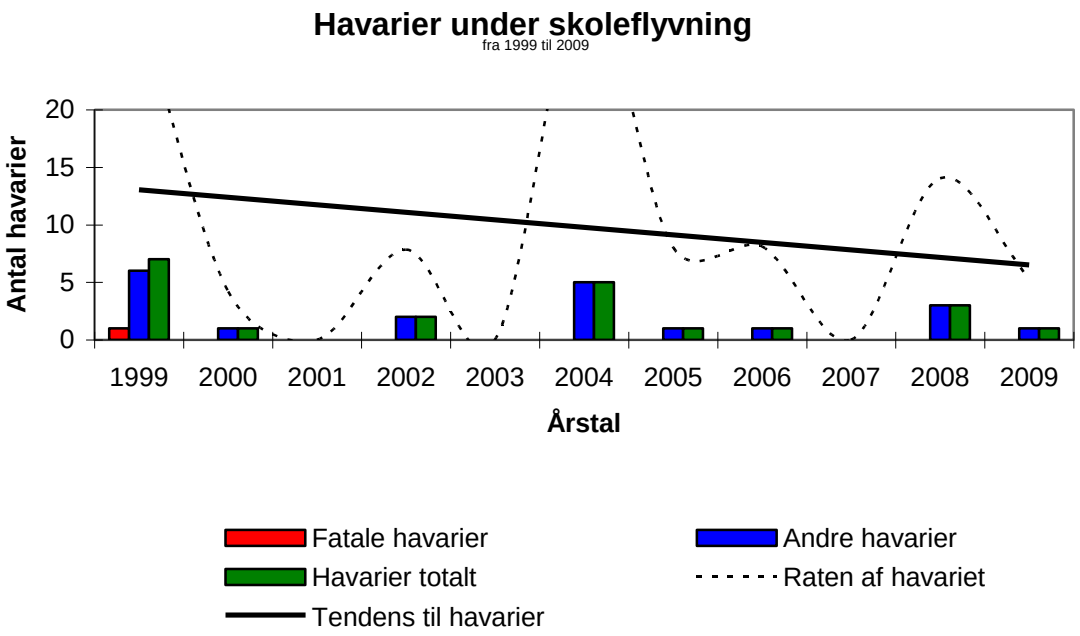
Havarier under charterflyvning fra 1999 til 2009	Accidents on chartered flights from 1999 to 2009
Antal havarier	Number of accidents
Årstal	Year
Fatale havarier	Fatal accidents
Andre havarier	Other accidents
Havarier totalt	Total accidents
Raten af havarier	Rate of accidents
Tendens til havarier	Tendency towards accidents

The accidents that occurred on chartered flights in 2009 all occurred on landing, and the contributory factors were split 50-50 between Human Factors and Environment.



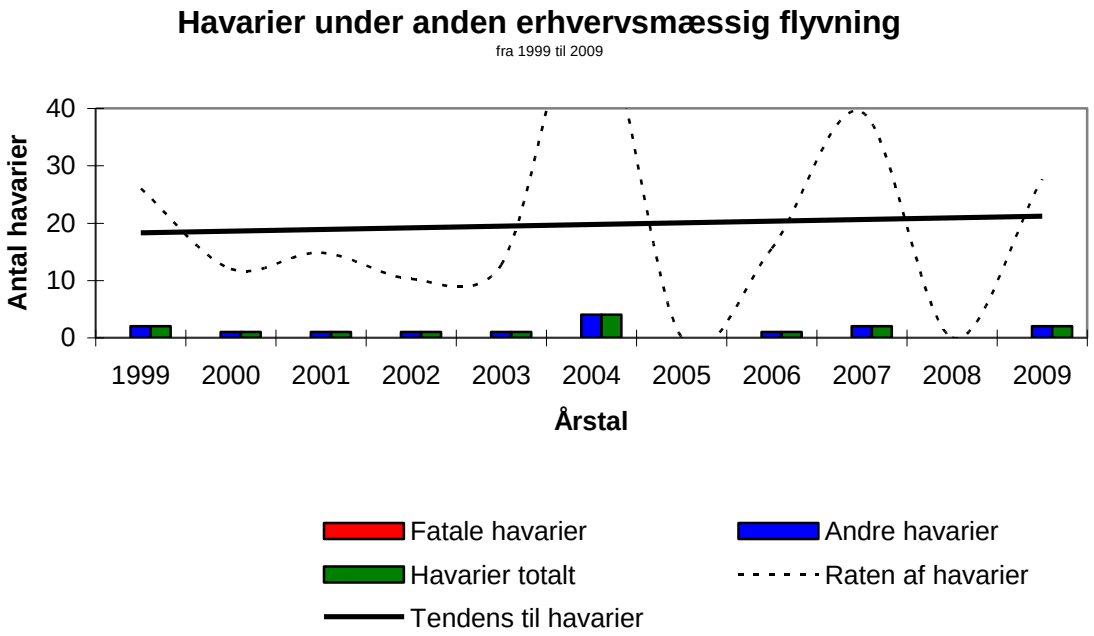
Havarier under taxaflyvning fra 1999 til 2009	Accidents on taxi flights from 1999 to 2009
Antal havarier	Number of accidents
Årstal	Year
Fatale havarier	Fatal accidents
Andre havarier	Other accidents
Havarier totalt	Total accidents
Raten af havarier	Rate of accidents
Tendens til havarier	Tendency towards accidents

No accidents occurred on taxi flights in 2009, which is why the flight phases and contributory factors are not given.



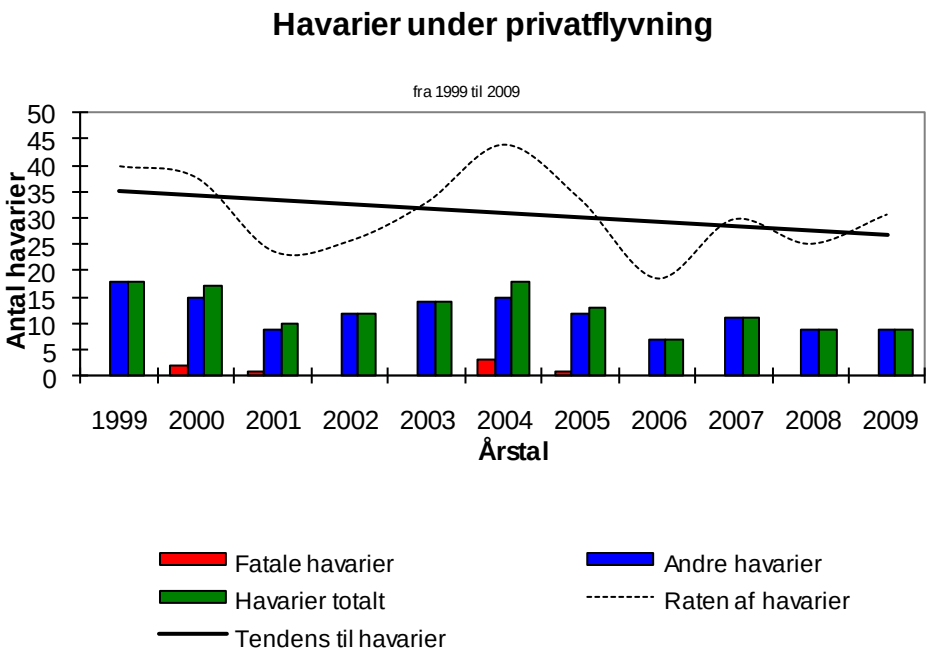
Havarier under skoleflyvning fra 1999 til 2009	Accidents on training flights from 1999 to 2009
Antal havarier	Number of accidents
Årstal	Year
Fatale havarier	Fatal accidents
Andre havarier	Other accidents
Havarier totalt	Total accidents
Raten af havarier	Rate of accidents
Tendens til havarier	Tendency towards accidents

The accidents that occurred on training flights in 2009 all occurred on landing and the contributory factor was Human Factors.

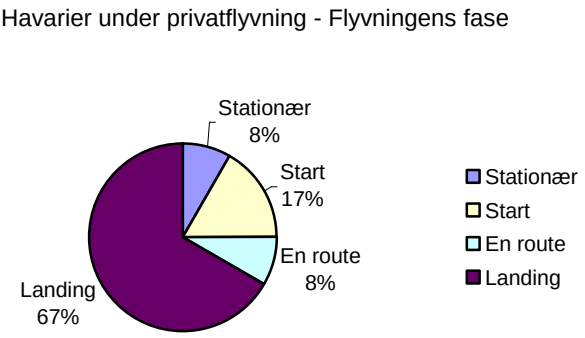


Havarier under anden erhvervsflyvning fra 1999 til 2009	Accidents on other commercial flights from 1999 to 2009
Antal havarier	Number of accidents
Årstal	Year
Fatale havarier	Fatal accidents
Andre havarier	Other accidents
Havarier totalt	Total accidents
Raten af havarier	Rate of accidents
Tendens til havarier	Tendency towards accidents

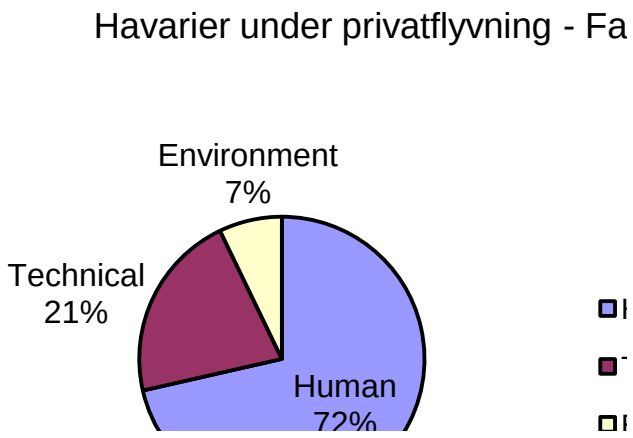
The accidents that occurred on other commercial flights in 2009 were split 50-50 between take-off and landing phases. The contributory factors were split 50-50 between Human Factors and Environment.



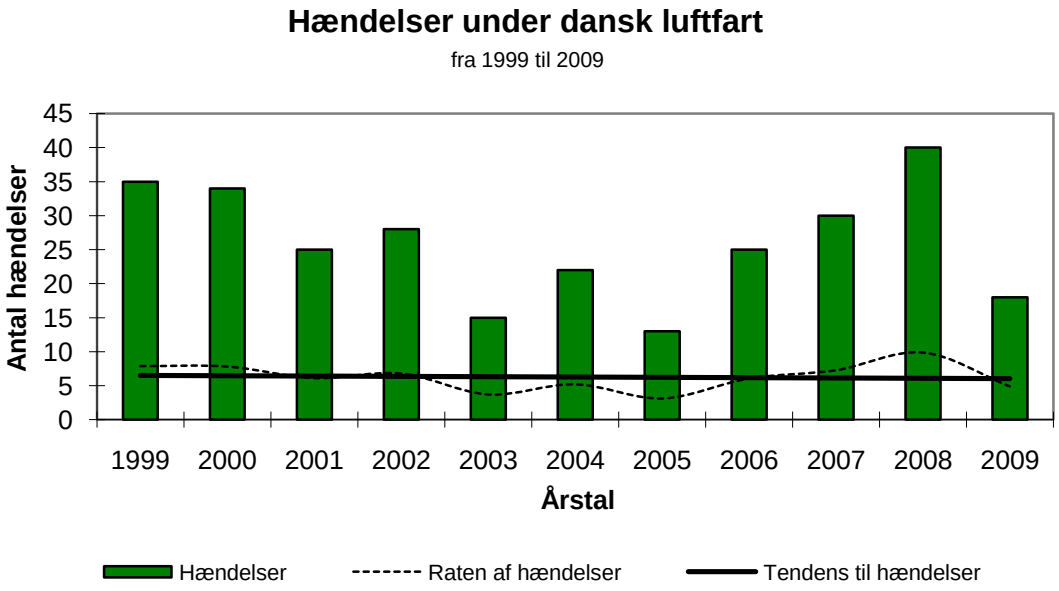
Havarier under privatflyvning fra 1999 til 2009	Accidents on private flights from 1999 to 2009
Antal havarier	Number of accidents
Årstal	Year
Fatale havarier	Fatal accidents
Andre havarier	Other accidents
Havarier totalt	Total accidents
Raten af havarier	Rate of accidents
Tendens til havarier	Tendency towards accidents



Havarier under privatflyvning – Flyvningens fase	Accidents on private flights – Flight phase
Stationær	Stationary
Start	Take-off

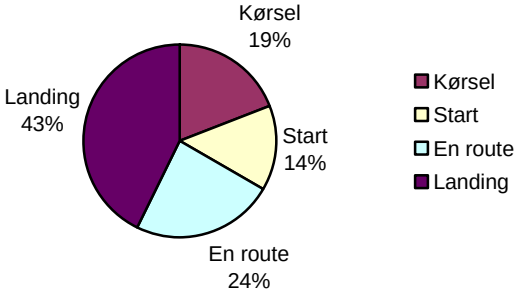


Havarier under privatflyvning – Faktorer	Accidents on private flights – Factors



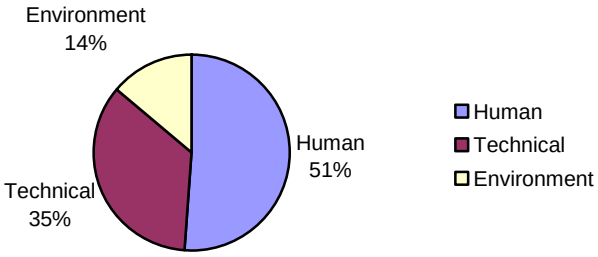
Hændelser under dansk luftfart fra 1999 til 2009	Incidents in Danish aviation from 1999 to 2009
Antal hændelser	Number of incidents
Årstal	Year
Hændelser	Incidents
Raten af hændelser	Rate of incidents
Tendens til hændelser	Tendency towards incidents

Hændelser under dansk luftfart - Flyvningens fase

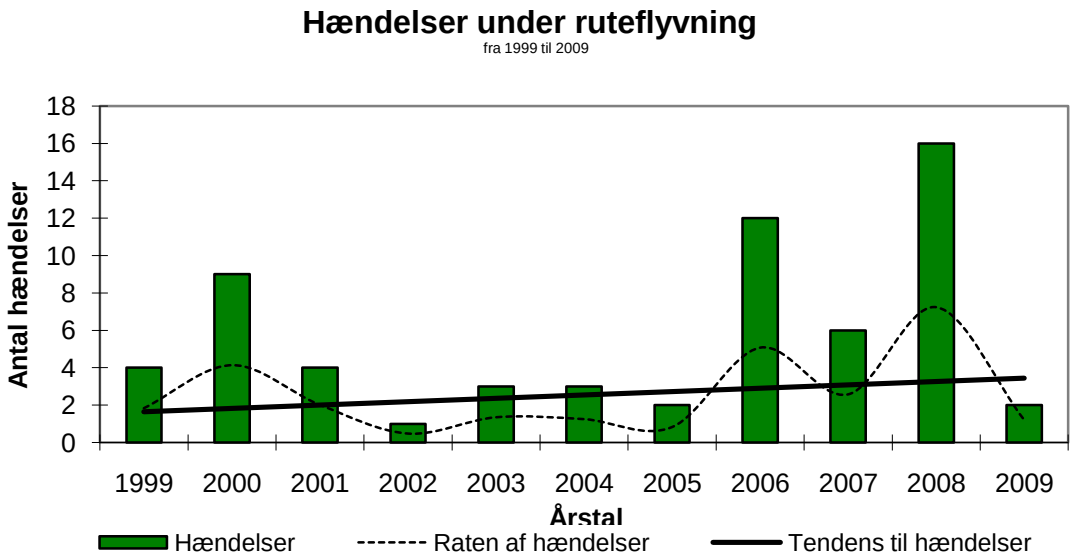


Hændelser under dansk luftfart – Flyvningens fase	Incidents in Danish aviation – Flight phase
Kørsel	Taxiing
Start	Take-off

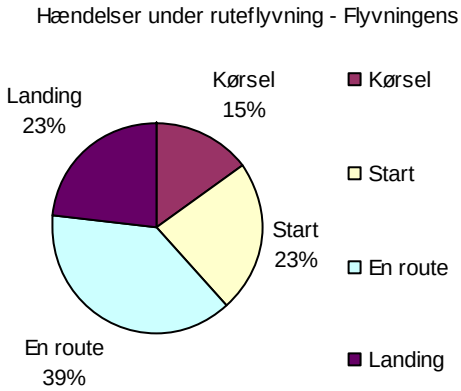
Hændelser under dansk luftfart - Faktorer



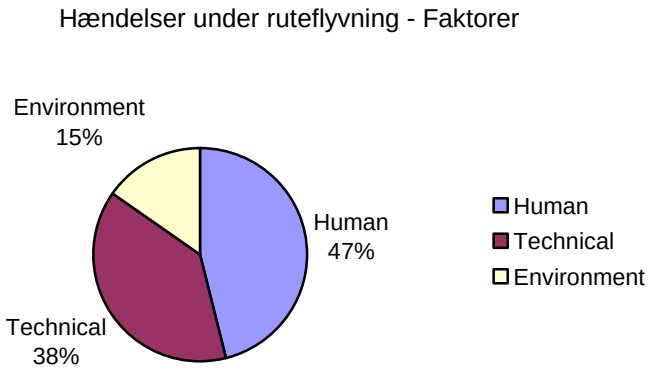
Hændelser under dansk luftfart – Faktorer	Incidents in Danish aviation – Factors



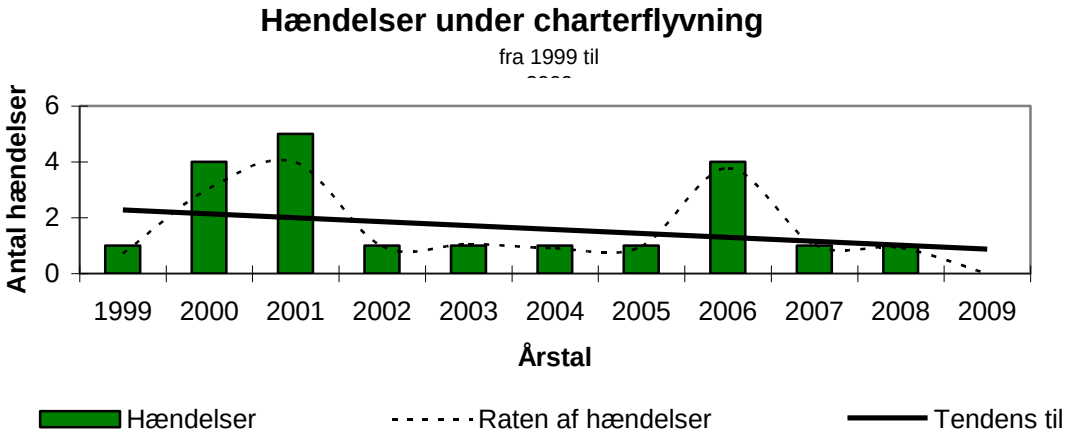
Hændelser under ruteflyvning fra 1999 til 2009	Incidents on scheduled flights from 1999 to 2009
Antal hændelser	Number of incidents
Årstal	Year
Hændelser	Incidents
Raten af hændelser	Rate of incidents
Tendens til hændelser	Tendency towards incidents



Hændelser under ruteflyvning– Flyvningens fase	Incidents on scheduled flights – Flight phase
Kørsel	Taxiing
Start	Take-off

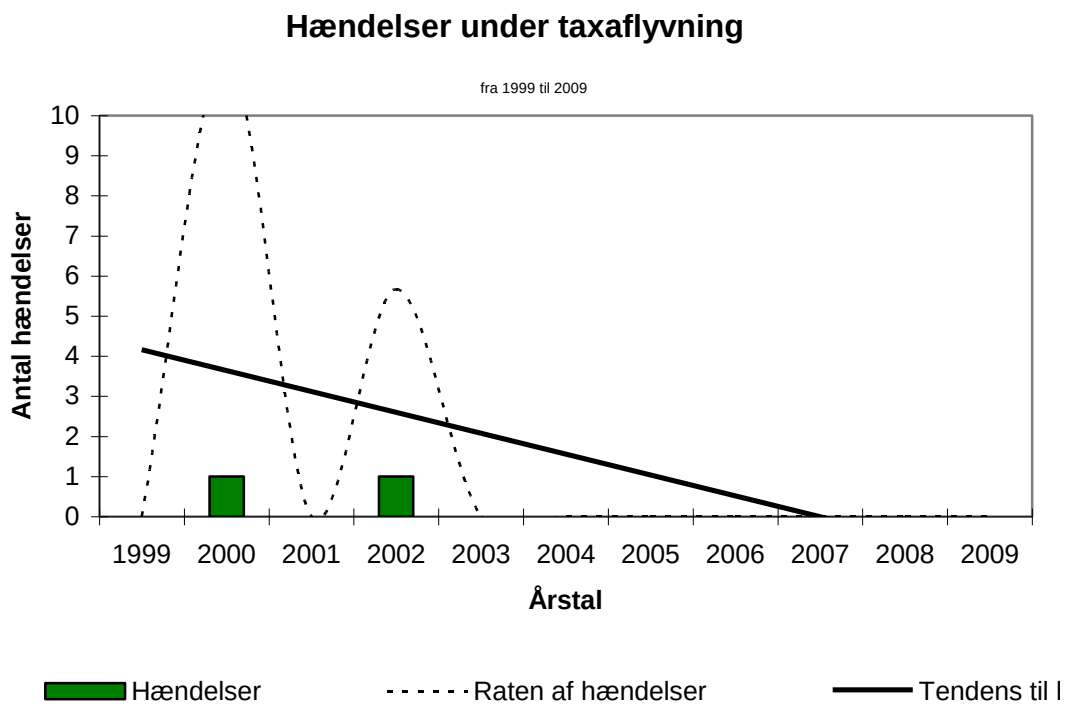


Hændelser under ruteflyvning – Faktorer	Incidents on scheduled flights – Factors



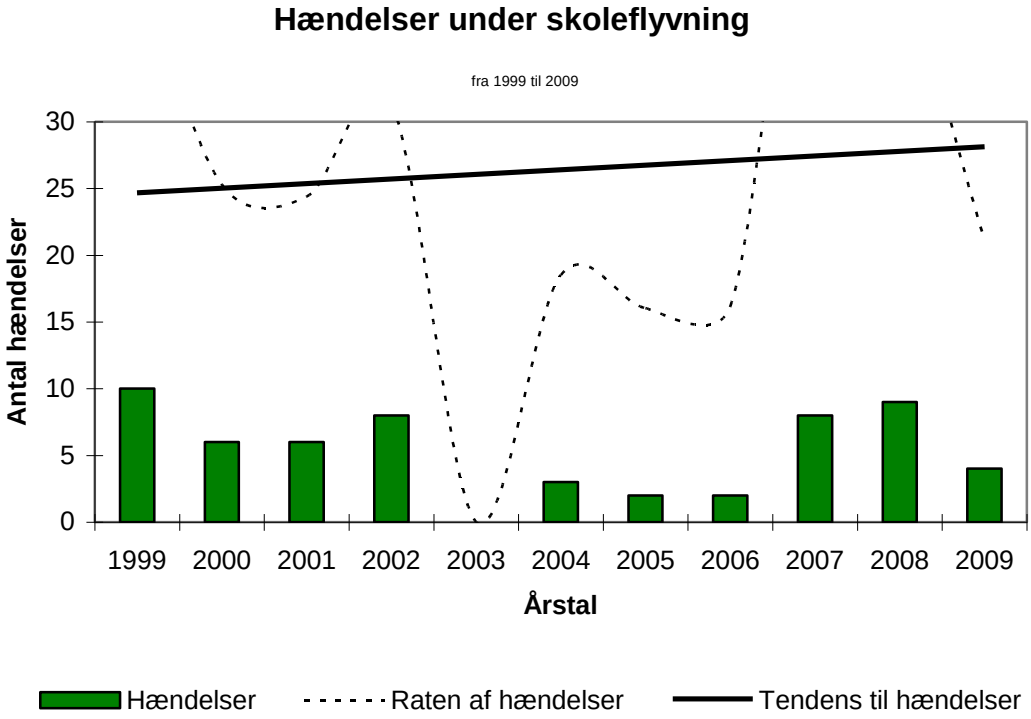
Hændelser under charterflyvning fra 1999 til 2009	Incidents on charter flights from 1999 to 2009
Antal hændelser	Number of incidents
Årstal	Year
Hændelser	Incidents
Raten af hændelser	Rate of incidents
Tendens til hændelser	Tendency towards incidents

No incidents occurred on charter flights in 2009, which is why the flight phases and contributory factors are not given.

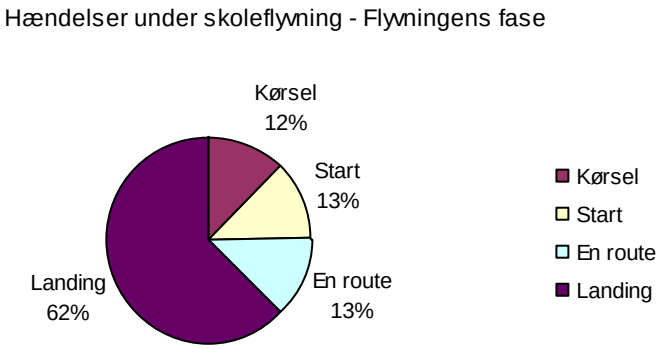


Hændelser under taxaflyvning fra 1999 til 2009	Incidents on taxi flights from 1999 to 2009
Antal hændelser	Number of incidents
Årstal	Year
Hændelser	Incidents
Raten af hændelser	Rate of incidents
Tendens til hændelser	Tendency towards incidents

No incidents occurred on taxi flights in 2009, which is why the flight phases and contributory factors are not given.

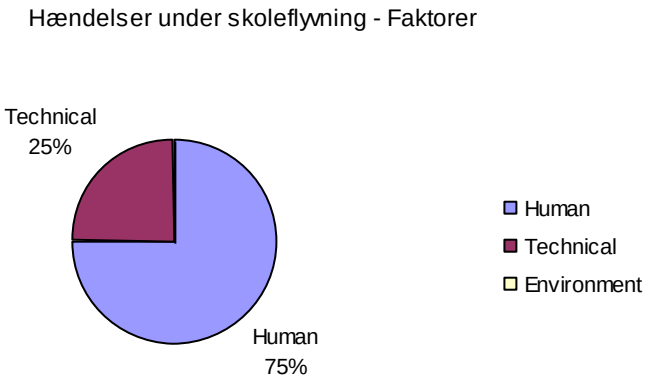


Hændelser under skoleflyvning fra 1999 til 2009	Incidents on training flights from 1999 to 2009
Antal hændelser	Number of incidents
Årstal	Year
Hændelser	Incidents
Raten af hændelser	Rate of incidents
Tendens til hændelser	Tendency towards incidents

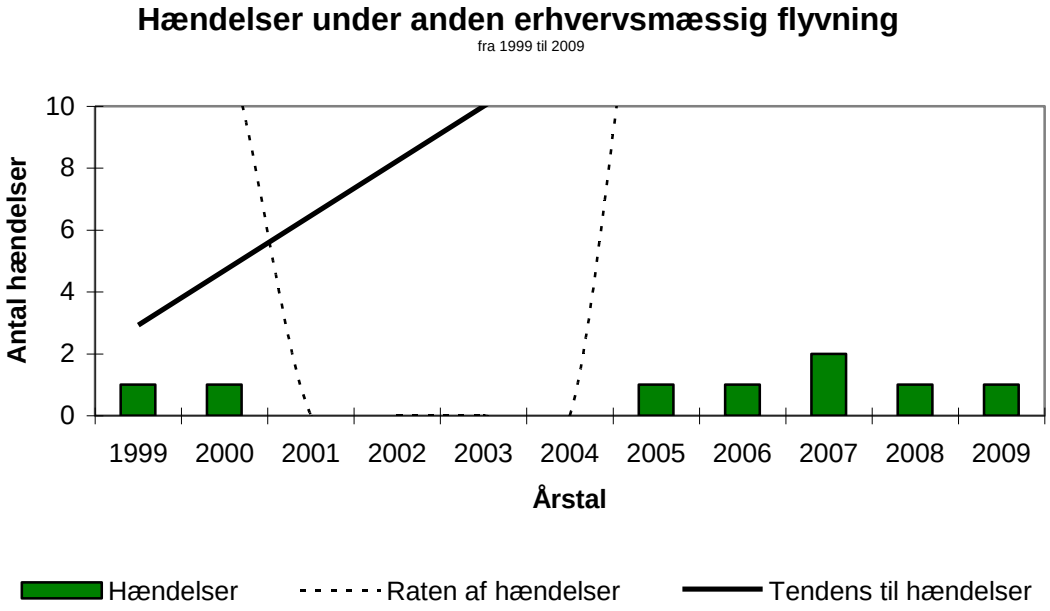


Hændelser under skoleflyvning– Flyvningens fase	Incidents on training flights – Flight phase
Kørsel	Taxiing

Start	Take-off

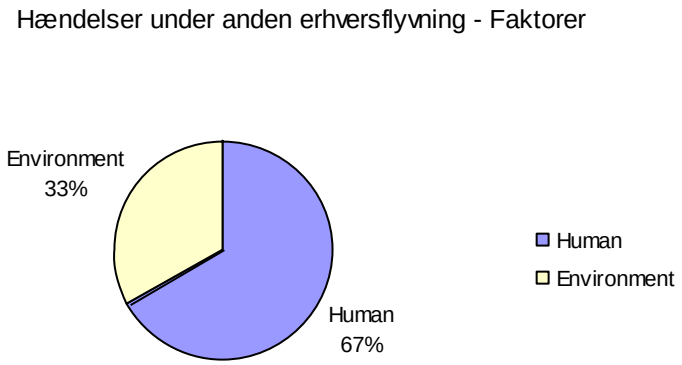


Hændelser under skoleflyvning – Faktorer	Incidents on training flights – Factors

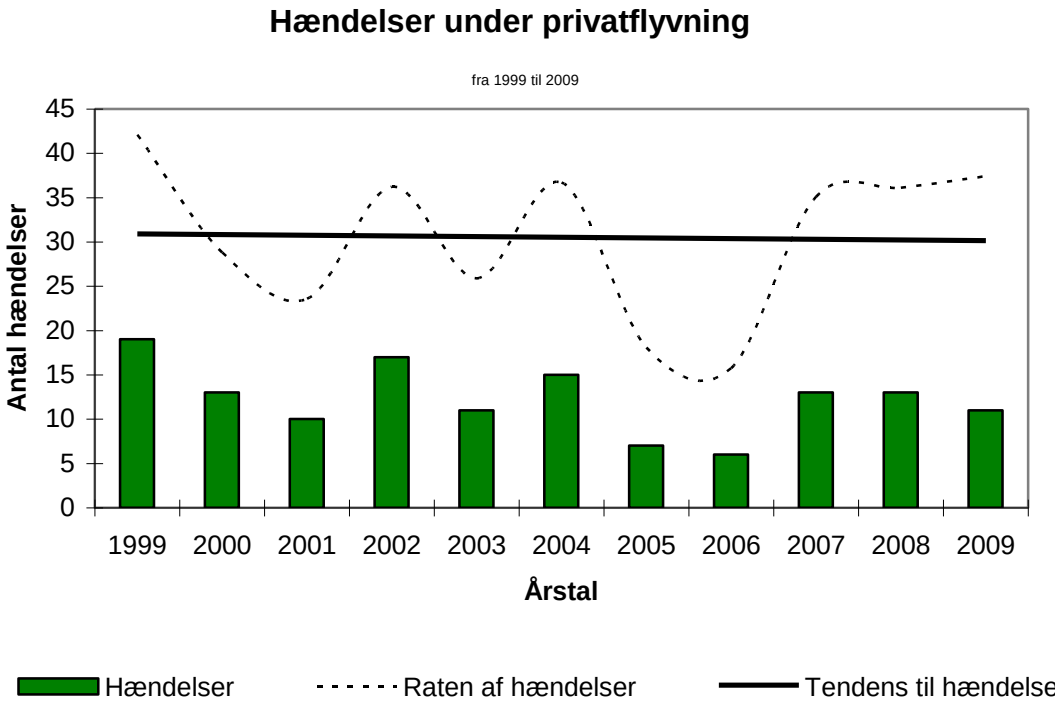


Hændelser under anden erhvervsmæssig flyvning fra 1999 til 2009	Incidents on other commercial flights from 1999 to 2009
Antal hændelser	Number of incidents
Årstal	Year
Hændelser	Incidents
Raten af hændelser	Rate of incidents
Tendens til hændelser	Tendency towards incidents

The incidents that occurred on other commercial flights in 2009 were split 50-50 between en-route and landing phases.

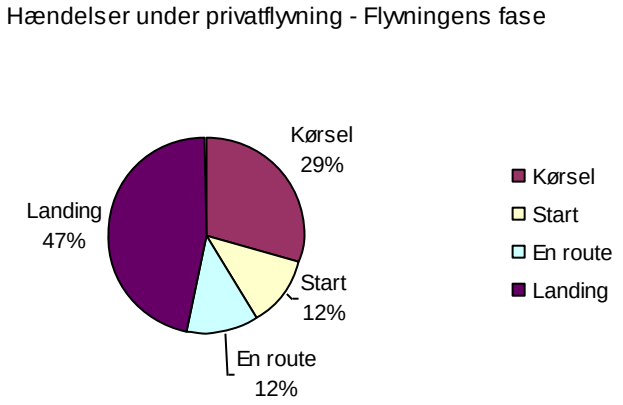


Hændelser under anden erhvervsflyvning – Faktorer	Incidents on other commercial flights – Factors

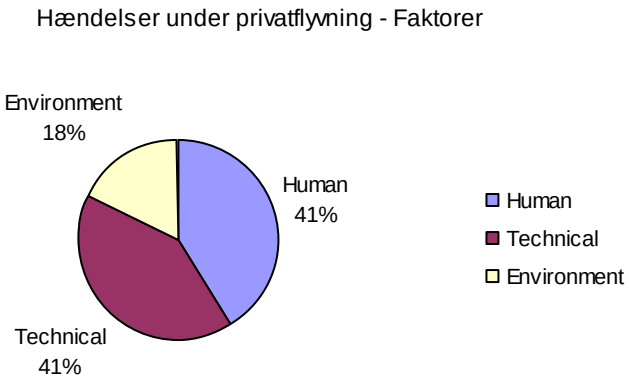


Hændelser under privatflyvning fra 1999 til 2009	Incidents on private flights from 1999 to 2009
Antal hændelser	Number of incidents
Årstal	Year
Hændelser	Incidents
Raten af hændelser	Rate of incidents

Tendens til hændelser	Tendency towards incidents

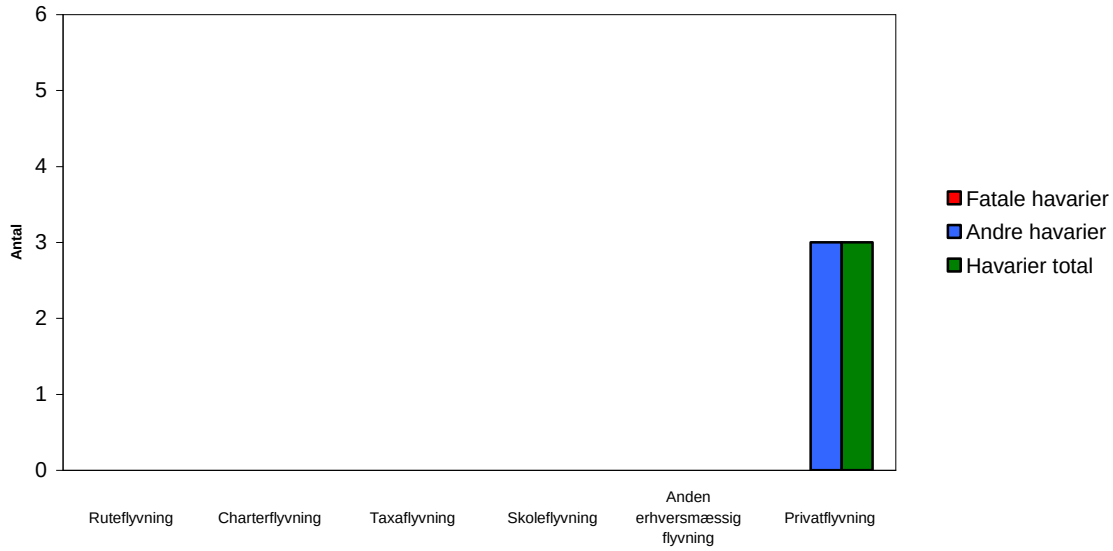


Hændelser under privatflyvning– Flyvningens fase	Incidents on private flights – Flight phase
Kørsel	Taxiing
Start	Take-off

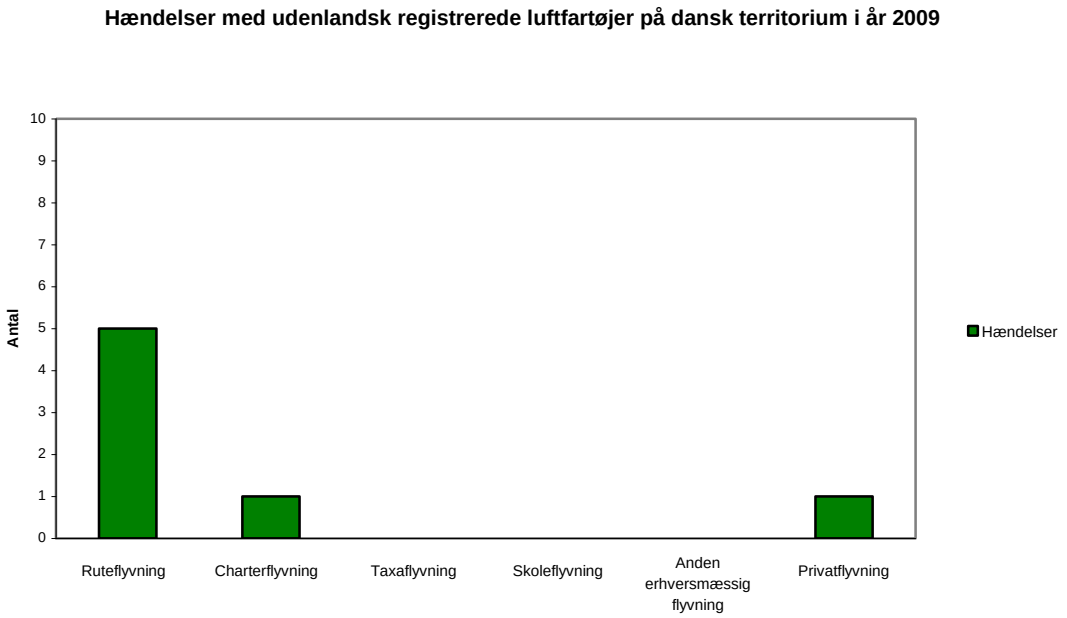


Hændelser under privatflyvning – Faktorer	Incidents on private flights – Factors

Havarier med udenlandsk registrerede luftfartøjer på dansk territorium i år 2009



Havarier med udenlandsk registrerede luftfartøjer på dansk territorium i år 2009	Accidents with foreign-registered aircraft on Danish territory in 2009
Antal	Number
Fatale havarier	Fatal accidents
Andre havarier	Other accidents
Havarier total	Total accidents
Ruteflyvning	Scheduled flights
Charterflyvning	Charter flights
Taxaflyvning	Taxi flights
Skoleflyvning	Training flights
Anden erhvervsmæssig flyvning	Other commercial flights
Privatflyvning	Private flights

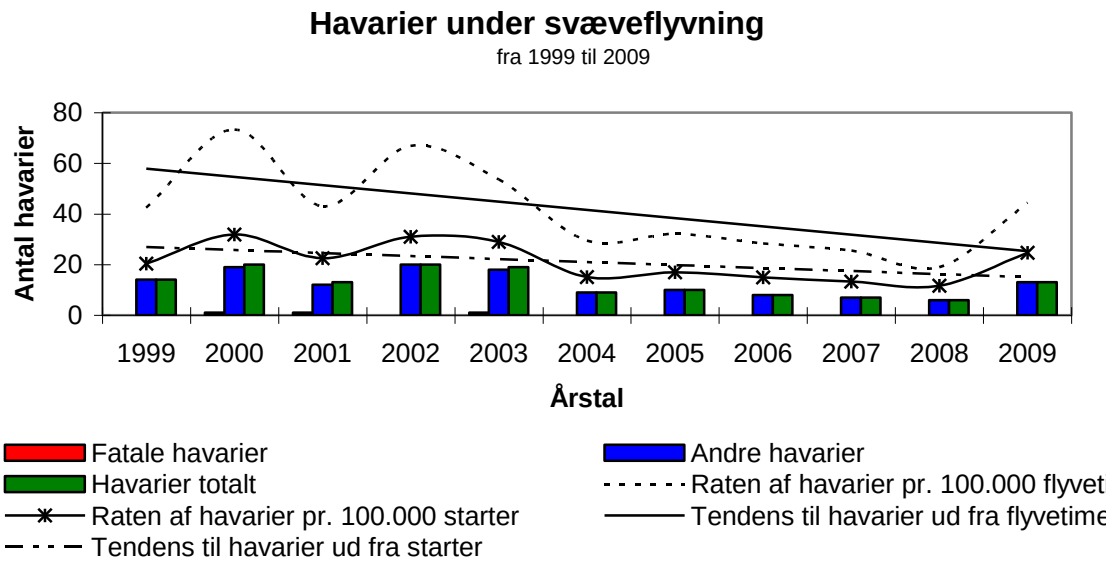


Hændelser med udenlandsk registrerede luftfartøjer på dansk territorium i år 2009	Incidents with foreign-registered aircraft on Danish territory in 2009
Hændelser	Incidents
Ruteflyvning	Scheduled flights
Charterflyvning	Charter flights
Taxaflyvning	Taxi flights
Skoleflyvning	Training flights
Anden erhvervsmæssig flyvning	Other commercial flights
Privatflyvning	Private flights

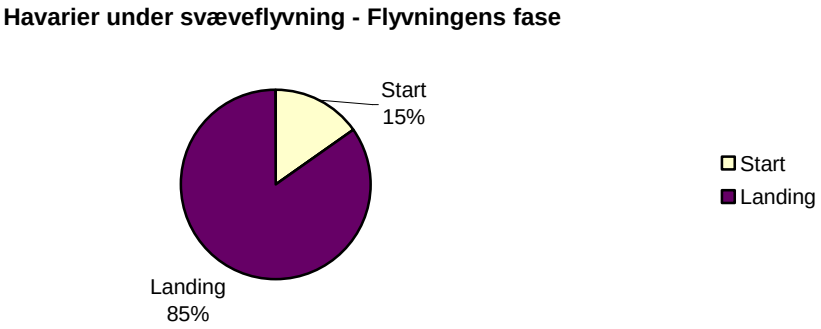
Gliding

For glider flights, the rate of accidents and incidents is calculated as the number of accidents and incidents per 100 000 flying hours and per 100 000 take-offs. Based on the calculated rate, the tendency towards accidents and incidents is calculated using the least squares method.

Tendency gives a picture of a rising or falling occurrence of aviation accidents or incidents seen from the number of flying hours reported to the Civil Aviation Administration Denmark.

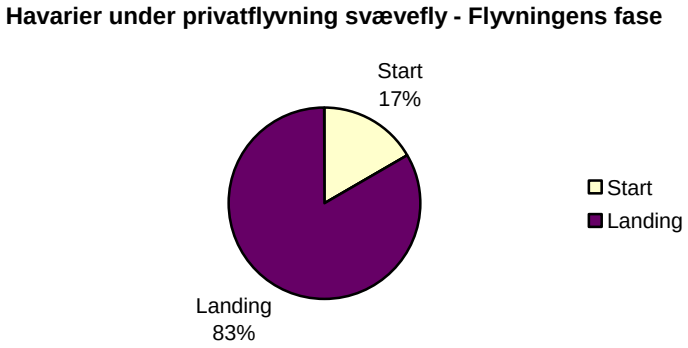


Havarier under svæveflyvning fra 1999 til 2009	Accidents on glider flights from 1999 to 2009
Antal havarier	Number of accidents
Årstal	Year
Fatale havarier	Fatal accidents
Andre havarier	Other accidents
Havarier totalt	Total accidents
Raten af havarier pr. 100.000 flyvetimer	Rate of accidents per 100 000 flying hours
Raten af havarier pr. 100.000 starter	Rate of accidents per 100 000 take-offs
Tendens til havarier ud fra flyvetimer	Tendency towards accidents based on flying hours
Tendens til havarier ud fra starter	Tendency towards accidents based on take-offs

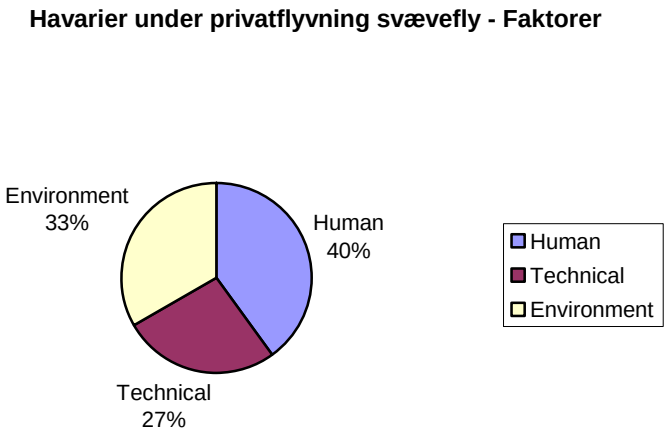


Havarier under svæveflyvning– Flyvningens fase	Accidents on glider flights – Flight phase
Start	Take-off

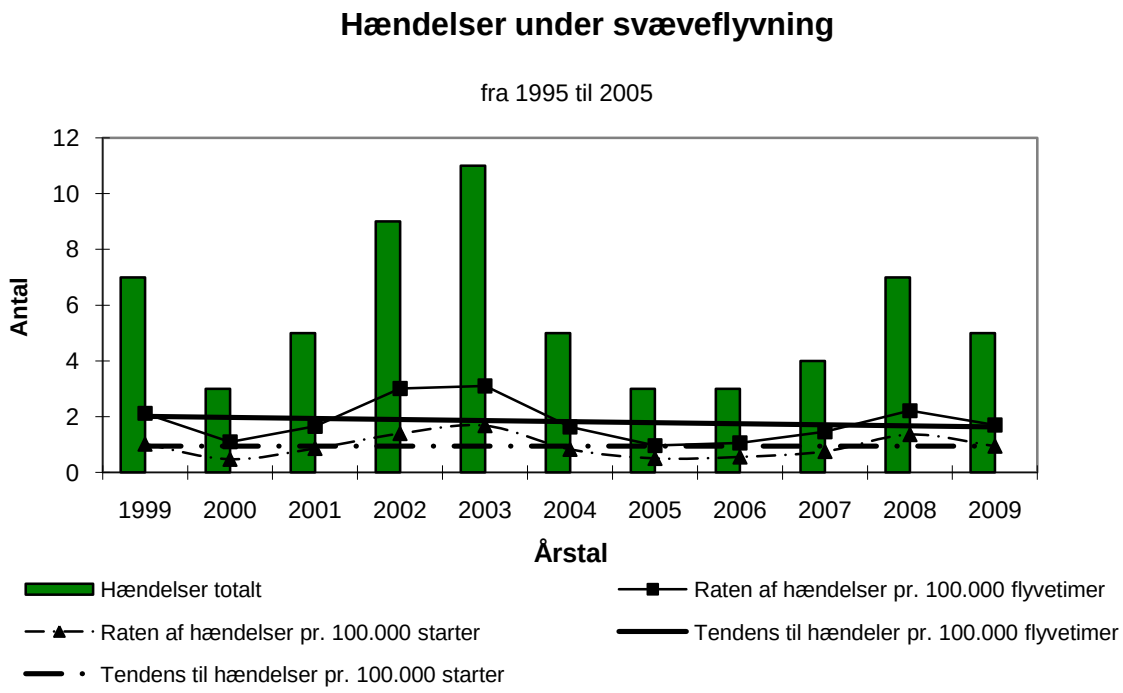
For training flights in 2009, there was one accident during landing and the contributory factor was Human Factor.



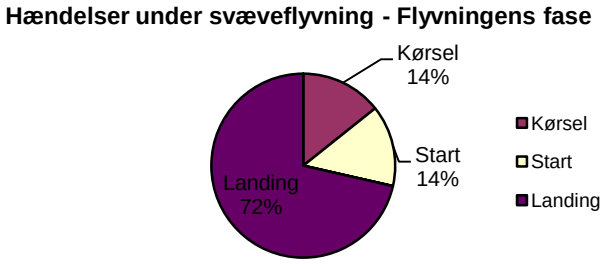
Havarier under privatflyvning svævefly – Flyvningens fase	Accidents on private glider flights – Flight phase
Start	Take-off



Havarier under privatflyvning svævefly – Flyvningens fase	Accidents on private glider flights – Flight phase
Faktorer	Factors

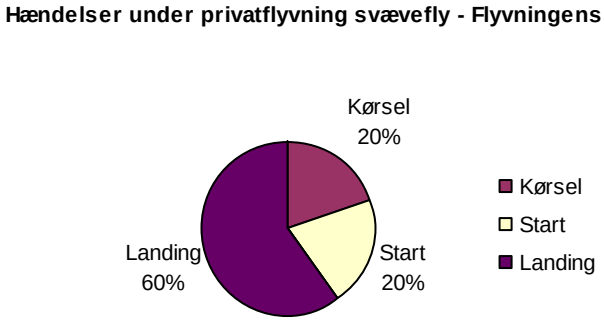


Hændelser under svæveflyvning fra 1995 til 2005	Incidents on glider flights from 1995 to 2005
Antal	Number
Årstal	Year
Hændelser totalt	Total incidents
Raten af hændelser pr. 100.000 flyvetimer	Rate of incidents per 100 000 flying hours
Raten af hændelser pr. 100.000 starter	Rate of incidents per 100 000 take-offs
Tendens til hændelser pr. 100.000 flyvetimer	Tendency towards incidents per 100 000 flying hours
Tendens til hændelser pr. 100.000 starter	Tendency towards incidents per 100 000 take-offs



Hændelser under svæveflyvning – Flyvningens fase	Incidents on glider flights – Flight phase
Kørsel	Taxiing
Start	Take-off

For training flights in 2009, there were two accidents during landing and the contributory factor was Human Factors.

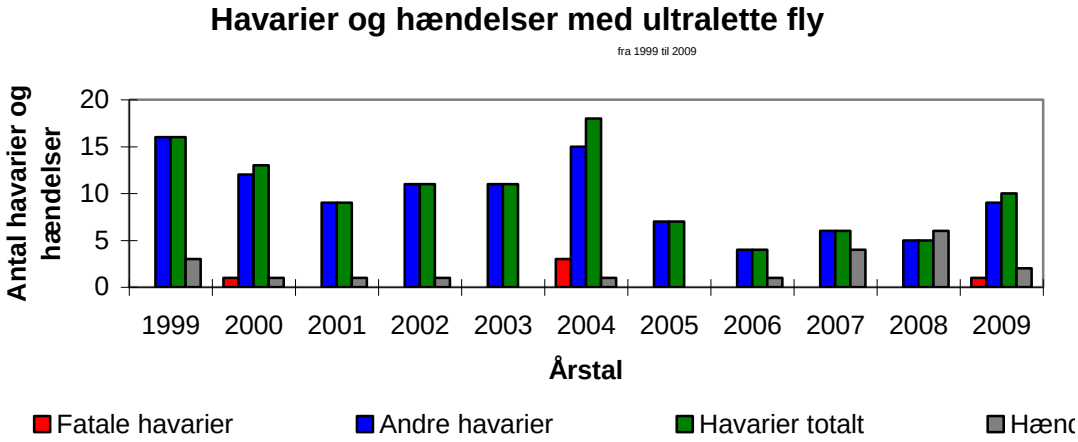


Hændelser under privatflyvning svævefly – Flyvningens fase	Incidents on private glider flights – Flight phase
Kørsel	Taxiing
Start	Take-off

The contributory factors were all Human Factors.

Ultralight flights

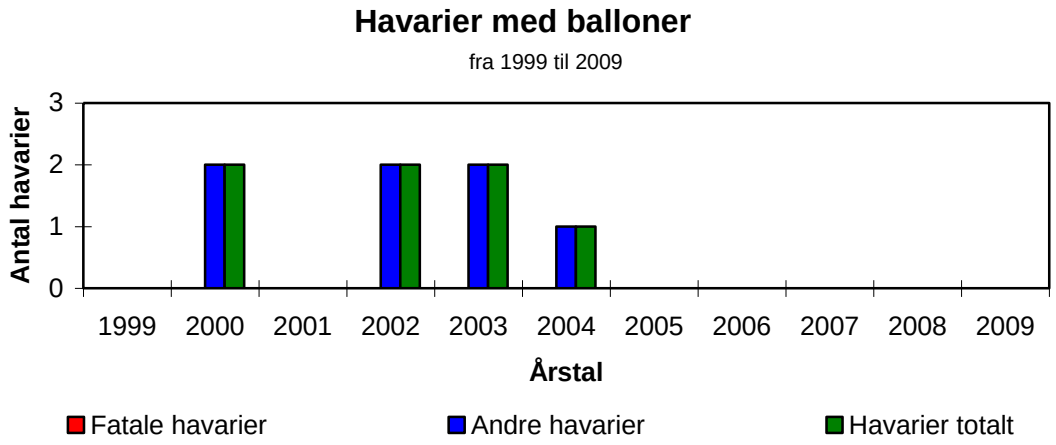
For ultralight aircraft, the number of accidents and incidents is recorded. The number of flying hours has not previously been recorded, but the Danish Ultralight Flying Association has begun collating flying hours in connection with the renewal of the ultralight flight flying permits. The Accident Investigation Board will begin to include rates and tendencies once there are sufficient data for accurate statistics.



Havarier og hændelser med ultralettefly fra 1999 til 2009	Accidents and incidents with ultralight aircraft from 1999 to 2009
Antal havarier og hændelser	Number of accidents and incidents
Årstal	Year
Fatale havarier	Fatal accidents
Andre havarier	Other accidents
Havarier totalt	Total accidents
Hændelser	Incidents

Balloon flights

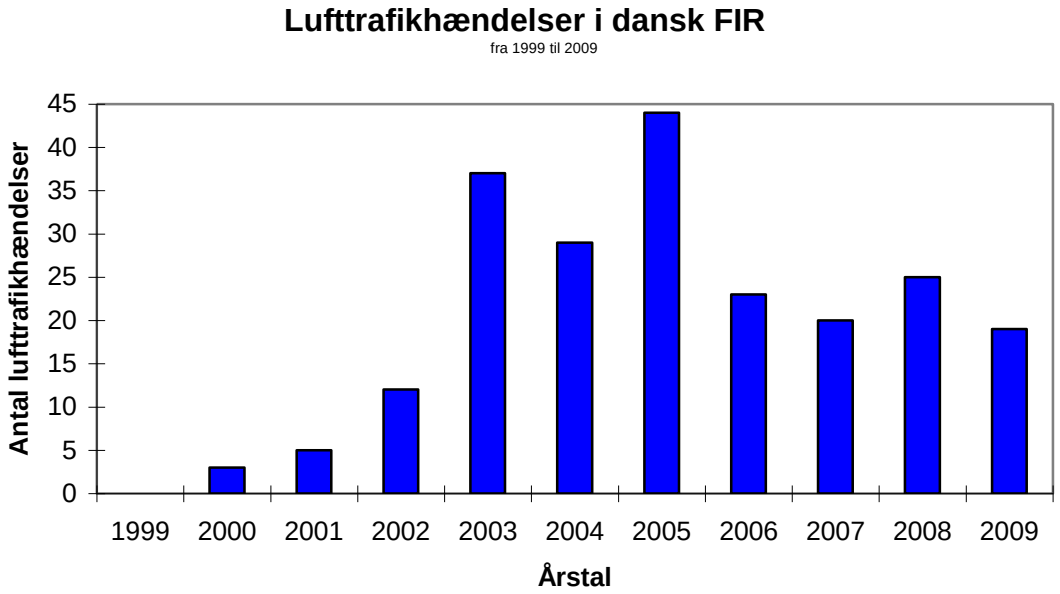
For balloons, the number of accidents is recorded. The number of incidents and the flying hours are not recorded.



Havarier med balloner fra 1999 til 2009	Accidents with balloons from 1999 to 2009
Antal havarier	Number of accidents
Årstal	Year
Fatale havarier	Fatal accidents
Andre havarier	Other accidents
Havarier totalt	Total accidents

Danish FIR

Air traffic incidents in Danish FIR cover both Danish and foreign-registered aircraft. The number of air traffic incidents is shown as the number of incidents handled each year. The rate and tendency are not included under air traffic incidents.



Lufttrafikhændelser i dansk FIR fra 1999 til 2009	Air traffic incidents in Danish FIR from 1999 to 2009
Antal lufttrafikhændelser	Number of air traffic incidents
Årstal	Year

ANNEX 4

STATISTIS FOR THE RAILWAYS SECTOR

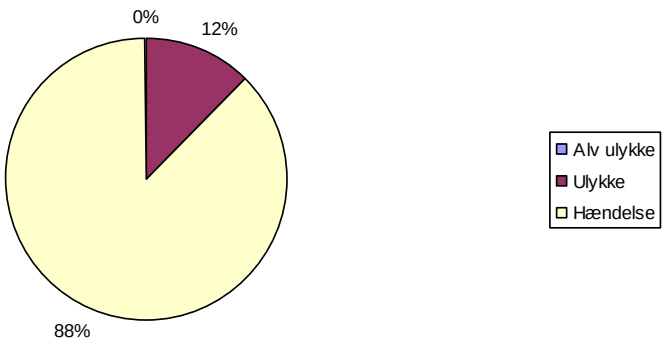
The statistical overviews for the railways sector are currently limited to presenting data from 2009 in relation to

- the division of accidents and incidents according to level of seriousness, and
- the division of accidents/incidents by category.

In the railways sector, a common European database (ERAIL) is currently being developed. With ERAIL's implementation, it is expected that a series of standardised parameters will henceforth be defined and thereafter systematically recorded, which will make more ample statistical information easily accessible.

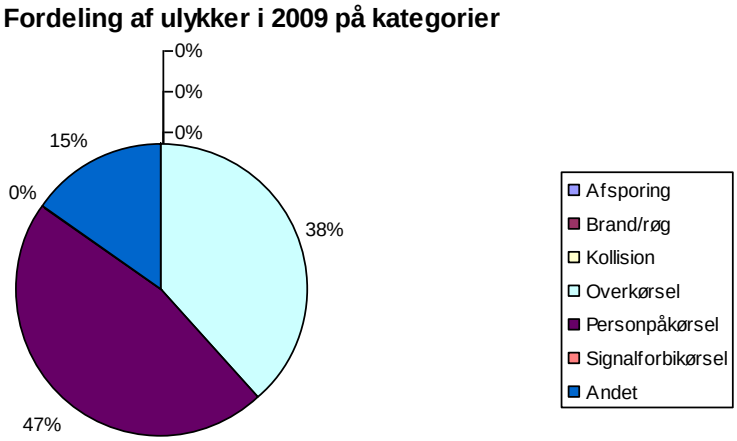
Each year, the National Rail Authority produces a safety report ('Safety report for the railways 20xx'), which is based on annual reports from operators and infrastructure managers in Denmark. These reports also include those accidents and incidents that have been investigated by the Accident Investigation Board. These reports discuss developments in accidents over a period of years, and the accidents are seen in relation to the amount of traffic on the railways (million train-km).

Fordeling af indrapporteringer i 2009 efter alvorlighed



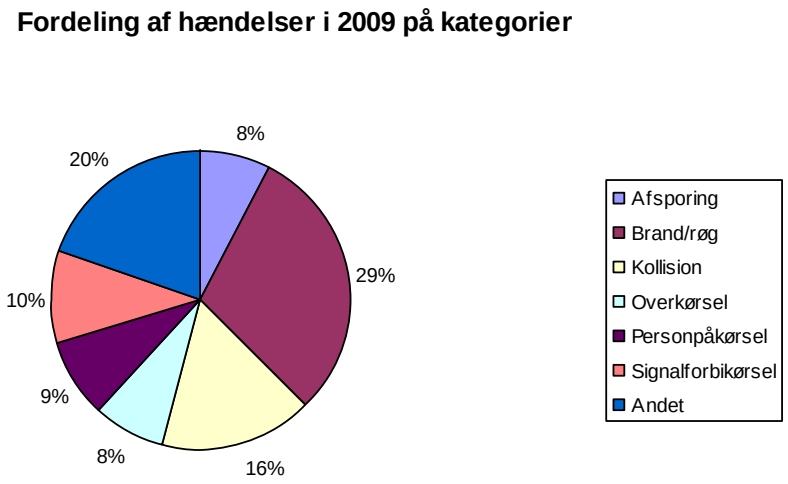
Fordeling af indrapportinger i 2009 efter alvorlighed	Division of reports in 2009 according to seriousness
Alv ulykke	Serious accident
Ulykke	Accident
Hændelse	Incident

In 2009, 13 accidents were reported to the Accident Investigation Board, and these fell into 3 categories – crossing accidents, collisions with persons and other.



Fordeling af ulykker i 2009 på kategorier	Division of accidents in 2009 by category
Afsporing	Derailment
Brand/røg	Fire/smoke
Kollision	Collision
Overkørsel	Crossing
Personpåkørsel	Collision with person
Signalforbikørsel	Passing of red light
Andet	Other

In 2009, 92 incidents were reported to the Accident Investigation Board, and these were spread across all 7 categories used by the Accident Investigation Board when recording, with fire/smoke formation as the most representative single category.



Fordeling af hændelser i 2009 på kategorier	Division of incidents in 2009 by category
Afsporing	Derailment
Brand/røg	Fire/smoke
Kollision	Collision
Overkørsel	Crossing
Personpåkørsel	Collision with person
Signalforbikørsel	Passing of red light
Andet	Other