NORTHERN IRELAND PEDESTRIAN FATALITY REPORT 2014

In depth Study Of n.55 Pedestrian Fatalities In Northern Ireland Between 2008 And 2012

Elaine Hardy PhD

This study was supported with a grant from the Rees Jeffreys Road Fund

Rees Jeffreys Road Fund

www.reesjeffreys.co.uk

Executive Summary

This report analyses n.55 cases of pedestrian fatalities, equal to 73% of the total in Northern Ireland between 2008 and 2012 which were attended by the Forensic Science Northern Ireland (FSNI) Road Traffic Collision investigators. (There were n.75 recorded pedestrian fatalities in Northern Ireland during this period). The cases reported in this study are the outcome of investigations carried out by the Road Traffic Collision Investigation Unit of the Forensic Science Northern Ireland between January 2008 and December 2012.

There were n.39 Coroners' inquest reports requested and the findings were made available in relation to the collisions analysed in this study in n.37 cases.

In n.22 (40%) collisions, the weather was dry; in n.11 (20%) collisions, there was either heavy rain or rain; in a further n.11 (20%) cases, the conditions were indicated as wet; in one case (2%) it was foggy and in another it was a sunny day (2%).

The majority of the collisions (n.34 or 62%) occurred on an urban road, while n.20 (36%) occurred on a rural road and one case (2%) occurred on a motorway.

In n.30 (55%) of cases the pedestrians wore dark clothing. Only one pedestrian had reflective elements (a High Visibility vest). In n.3 (5%) of cases the pedestrians wore light clothing (but with no reflective elements).

Most collisions occurred in darkness n.35 (64%), while the remaining n.20 (36%) collisions occurred during daylight.

During the period of darkness, there was information regarding lighting in relation to n.31/35 (86%) cases. In the n.14 cases where there were street lights, n.13 cases were on urban roads and in one case there were street lights on a rural road. Of the n.17 cases where there was no street lighting in a period of darkness, n.16 fatalities took place on rural roads, and one on a motorway.

There were n.13/55 (23%) cases in which glare was a contributory factor in the collisions with the pedestrians. With the exception of n.2 cases, these collisions occurred during the hours of darkness and the glare came from the headlights of oncoming vehicles which meant that the driver was distracted.

Of the cases where the orientation was identified, (n.44/55) indicates that n.8/30 pedestrians were struck from behind in darkness, n.4/30 in front and n.18/30 on the side. During daylight, all cases where the orientation was identified (n.14) were struck on the side. The side of the vehicle where impact occurred indicates that 60% of pedestrians were stuck by the nearside (left) and 27.3% by the offside (right) of the vehicle.

In n.50 (91%) of the incidents, the vehicle was not driven at excessive speed (over the speed limit). The five drivers who exceeded the speed limit all did so where the maximum speed limit was 30 mph and on an urban road and in all five cases the vehicles involved were cars.

There were n.35 (64%) cars involved in collisions with pedestrians, n.8 (15%) lorries, n.5 (9%) vans, n.3 (5%) buses and n.3 (5%) taxis. There was one trailer involved in a collision with a pedestrian.

Children aged between one to 16 years represented the smallest group (12.7%); the group representing adults (including one 17 year old) total n.31/55 (56.4%) of the fatalities.

There were n.17/55 (31%) elderly pedestrians (aged over 70 years) involved in collisions with vehicles. In n.5 cases, the elderly pedestrians (n.2 females and n.3 males) crossed the road in front of a lorry.

There were n.17/55 pedestrians (31%) who were found to have alcohol in their blood at the time of the collision. The youngest pedestrian with alcohol found in his blood was 17 years old and the oldest was a male aged 76 years. In n.11 of these cases, the collision occurred on a rural road. All n.17 cases occurred during the hours of darkness. The average blood alcohol content was 232 mg per 100 ml.

The consensus of the Focus Group was that there are three areas of concern in relation to pedestrian fatalities: visibility, the elderly and intoxicated pedestrians. Cognitive impairment underpins these three groups:

- The visibility of drivers can be impaired due to darkness and glare. This is compounded due to the dark clothing of pedestrians which inhibits the drivers to discern them in darkness.
- The elderly are vulnerable road users because of their frailty and at times inability to understand speed and distance.
- Intoxicated pedestrians are a danger to themselves because of the levels of alcohol ingested which cause these pedestrians to be unstable and incoherent.

Recommendations include recognition that these three areas of concern need attention.

Representative organisations of drivers, trainers, vehicle manufacturers, commercial vehicles, pedestrians and the drinks industry should consider ways of providing information to their customers, clients or members to assist in reducing road casualties.

There also needs to be focus on the initial training of drivers in order to raise awareness to look more carefully for vulnerable pedestrians and recognise that the conditions on the road change constantly.

Technological improvements including cameras and sensors would benefit problems of blind spots for lorries and the haulage industry should continue to lobby the UK and EU governments to change the physical structure of lorries to lower and extend the cab, allowing the drivers to have a wider scope of vision.

Closer collaboration between road safety stakeholders would facilitate the exchange of information.

The FSNI Road Traffic Collision Investigation Unit is summoned regularly to attend Coroners' Inquests and Court proceedings to provide information regarding the dynamics of pedestrian fatalities in Northern Ireland. The outcome of these inquests and court proceedings in many cases are reliant on the testimony of the FSNI investigators. Thus the wealth of information that these investigators can provide would be of benefit to road safety stakeholders who are responsible for legislation, training, research and awareness campaigns in order to increase the knowledge and skills of these operators.

Abstract

This report analyses n.55 cases of pedestrian fatalities, equal to 73% of the total in Northern Ireland between 2008 and 2012, attended by the Forensic Science Northern Ireland (FSNI) Road Traffic Collision investigators. There were n.39 Coroners' inquest reports requested and the findings were made available in relation to the collisions analysed in this study in n.37 cases.

In n.30 (55%) of cases the pedestrians wore dark clothing. The majority of collisions occurred in darkness n.35 (64%), while the remaining n.20 (36%) collisions occurred during daylight.

In n.50 (91%) of the incidents, the vehicle was not driven at excessive speed (over the speed limit).

Children aged between one to 16 years represented the smallest group (12.7%); the group representing adults (including one 17 year old) total n.31/55 (56.4%) of the fatalities.

There were n.17/55 (31%) elderly pedestrians (aged over 70 years) involved in collisions with vehicles. In n.5 cases, the elderly pedestrians (n.2 females and n.3 males) crossed the road in front of a lorry.

There were n.17/55 pedestrians (31%) who were found to have alcohol in their blood at the time of the collision. All n.17 cases occurred during the hours of darkness. The average Blood Alcohol Content was 232 mg per 100 ml.

There are three areas of concern: visibility, the elderly and intoxicated pedestrians. Cognitive impairment underpins these three groups:

- The visibility of drivers can be impaired due to darkness and glare, this is compounded due to the dark clothing of pedestrians which inhibits the drivers to discern them in darkness.
- The elderly are vulnerable road users because of their frailty and at times inability to understand speed and distance.
- Intoxicated pedestrians are a danger to themselves because of the levels of alcohol ingested which cause these pedestrians to be unstable and incoherent.

With gratitude to the Forensic Science Northern Ireland Road Traffic Investigation Team and the Coroner's Service Northern Ireland for allowing access to the case files from which this report is based.

Contact Details:

Dr Elaine Hardy
e.mhardy@btinternet.com
Telephone: (+44) 02842757131; Mob: (+44) 07808 725830
www.righttoride.org.uk

Contents **page**

Figures

Tables

1. Introduction

Pedestrian fatality studies are generally taken from reports based on police statistics and do not necessarily have the depth or detail of the circumstances of the incidents. However the quality of statistical information available from the Police Service Northern Ireland (PSNI) provides an excellent summary of these incidents in this region of the United Kingdom[1]:

- Just less than one in five deaths on Northern Ireland's roads are pedestrians.
- Between 2008 and 2012, 75 pedestrians were killed and 933 seriously injured as a result of being hit by a vehicle while walking on our roads. During this period, pedestrians accounted for slightly less than 20% of all road deaths.

From a press release issued in 2012[2], the then Minister for the Northern Ireland Department of the Environment commented:

"Pedestrians do not have protection when they are hit by a vehicle. This makes pedestrians susceptible to serious injury when they are struck by a car, truck or bus. Even a relatively low-speed collision can result in death (...). The research shows that almost three quarters of pedestrian deaths were due to pedestrian error, while drivers were responsible for over one quarter of pedestrian deaths (...)".

This study is an examination of n.55 collision scene reports from Senior Scientific Officers of the Road Traffic Collision Investigation Unit, Forensic Science, Northern Ireland (FSNI). The Road Traffic Collision Investigation Unit attends road traffic fatalities in Northern Ireland. Over the five year period between 2008 and 2012, n.8 investigators attended the collision scenes. The attendance of the investigators was random and was simply based on which investigator was on call at the time of the collision. The findings of these reports are supported by n.37 Coroners' Verdicts.

The study and analysis of the findings of the Road Traffic Collision Investigation Unit – Forensic Science Northern Ireland and a selection of Coroners' reports was carried out by Elaine Hardy PhD, Research Analyst.

2. Background

According to the report "Stepping Out"[3] *..."walking is the glue in our transport system; and, as public health authorities are increasingly recognising, something that we need to promote strongly to avoid an epidemic of disease and ill-health.*

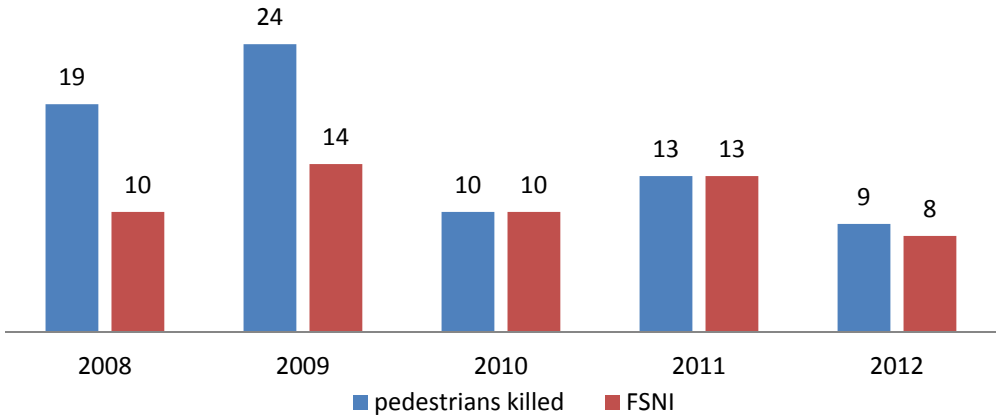
Compared with many countries around the world – when measured in terms of casualties per 100,000 population – the UK has a relatively good pedestrian casualty record. Yet there is no room for complacency and every reason to take more action and to do so now. Pedestrians present almost no threat to other road users yet suffer almost one quarter of total casualties killed or seriously injured on our roads."

This report analyses n.55 cases of pedestrian fatalities, equal to 73% of the total in Northern Ireland between 2008 and 2012 which were attended by the Forensic Science Northern Ireland (FSNI) Road Traffic Collision investigators. (there were n.75 pedestrian fatalities in Northern Ireland during this period[4]). The cases reported in this study are the outcome of investigations carried out by the Road Traffic Collision Investigation Unit of the Forensic Science Northern Ireland between January 2008 and December 2012.

---

[1] http://www.psni.police.uk/updates_road_traffic_statistics
[2] http://www.northernireland.gov.uk/news-doe-230512-attwood-launches-new
[3] Commissioned by PACTS – the Parliamentary Advisory Council for Transport Safety: http://www.roadsafetyanalysis.co.uk/wp-content/uploads/2013/05/Stepping-Out.pdf
[4] In the United Kingdom, fatalities that occur up to 30 days following a collision are counted in the official statistics. The FSNI (road collision investigation unit) typically attends collision scenes where there has been a fatality, on the request of the PSNI, the PPS (Public Prosecution Service) or other government agencies. The FSNI does not attend every collision scene unless requested, although they may be requested to investigate a fatality at a later date.

Figure One: Northern Ireland Statistics for Pedestrian Fatalities 2008-2012



3. Methodology

This qualitative and quantitative study analyses the findings of the Road Traffic Collision Investigation Unit cases of pedestrian fatalities between the period 2008 to 2012 as well as the relevant Coroners' inquests, to identify the circumstances leading to the event to determine why the collision happened and to draw conclusions from each case.

Both Microsoft Excel and SPPS software were used to analyse the data compiled from the case files to ensure accuracy and confidence that the cases are representative of pedestrian fatalities reported in Northern Ireland during the period examined. A summary of the case files was compiled in a 132 page report (Northern Ireland Pedestrian Fatality Report 2008 – 2012 Part Two). This document provides the background to the analysis. Due to the confidential nature of the information, this document will not be available in the public domain, but can be requested to read with the permission of the FSNI Road Traffic Collision Investigation Unit.

The collision scenes were attended by an investigator, a PSNI photographer and mapper. The files that the investigators prepare include photographs of the collision scene, witness statements, as well as maps, diagrams, laboratory examinations and their findings which are compiled in a report from each collision investigation.

Typically, the investigator arrives at the collision scene within 2 to 4 hours following the collision. Each collision investigation takes approximately six months to complete. The case files from which this report is based, contain information from the Investigators' reports including their findings and comments.

There were n.39 Coroners' inquest reports requested and the findings were made available in relation to the collisions analysed in this study in n.37 cases. (two were still ongoing when this report was written). In some of the cases reported in the study there may not have been Coroners' verdicts because there may have been a prosecution; the person charged with an offence may have pleaded guilty or the family may have indicated that they did not want a public enquiry.

3.1 Data Collected On-Scene:

Vehicle data

- Vehicle registration number, manufacturer, model
- Mechanical factors data
- Contribution of design or maintenance defects to collision or injury causation
- Collision or injury related cause factors
- Vehicle speed
- Vehicle systems: brakes, suspension, lighting

Collision scene, environment

- Road Topography
- Collision scene data
- Traffic and controls
- Verify collision configuration
- Preview collision cause factors
- Collision contribution of weather, view obstructions
- Collision contribution of road conditions and defects

Pedestrian factors

- Pre collision movements
- Orientation of pedestrian on impact
- Position of pedestrian on impact
- Rest position
- Clothing

4. Aims and Objectives

The aim of this study is to analyse each case study presented from the findings of the FSNI investigators and a selection of the Coroner's verdicts and provide the findings as an alternative source of information in relation to pedestrian fatalities in Northern Ireland.

The objective is to determine the primary cause and the contributory factors of the collisions which were attended by the FSNI Road Traffic Investigation Unit and from that information, to understand collision causation and ultimately endeavour to draw conclusions from other research and a focus group of road safety experts and police in order to provide recommendations to prevent or reduce further pedestrian fatalities.

5. Collision scene and environment factors of n.55 pedestrian fatalities

The following information including all figures and tables refers to the n.55 pedestrian fatalities attended by the FSNI Road Traffic Investigation Unit, which occurred between January 2008 and December 2012.

Figure two highlights that n.13 (23.6%) occurred from 10 p.m. up to 6 a.m. i.e. during the night and early morning, while n.16 (29.1%) occurred between 6 a.m. to 3 p.m.; n.13 (23.6%) occurred from 3 p.m. to 7 p.m. and the remaining n.13 (23.6%) occurred between 7 p.m. and 10 p.m. The distribution of the occurrence of the collisions is even with a slightly higher rate between 6 a.m. and 3 p.m.

Figure two: Time of collisions

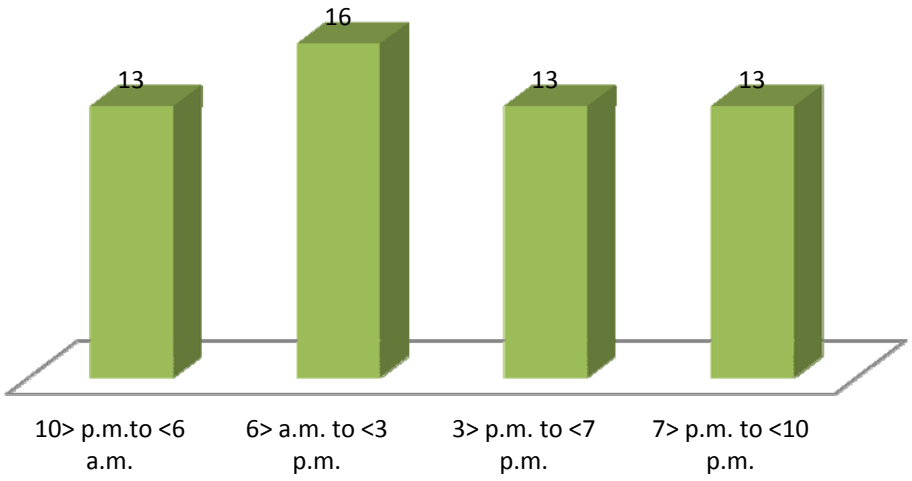


Figure three: There were n.17 (31%) pedestrian fatalities in spring; n.15 (27%) in winter; n.12 (22%) in autumn and n.11 (20%) in summer**.** (N.B. in mid winter, sunset typically commences at 4 p.m. and sunrise at 8.30 a.m.).

Figure three: Seasons

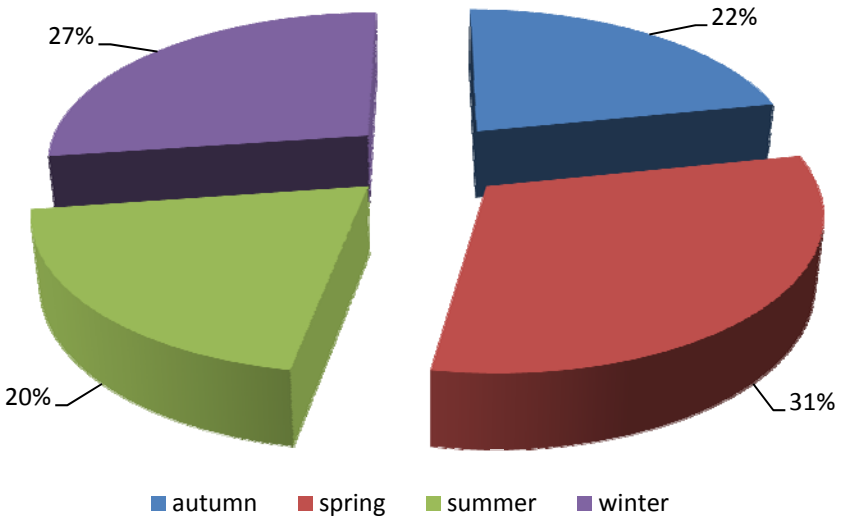


Figure four: In n.22 (40%) collisions, the weather was dry; in n.11 (20%) collisions, there was either heavy rain or rain; in a further n.11 (20%) cases, the conditions were indicated as wet – specifically the environment such as the road was wet; in one case (2%) it was foggy and in another it was a sunny day (2%). In n.9 cases (16%) there was no indication of the weather conditions.

Figure four: Weather

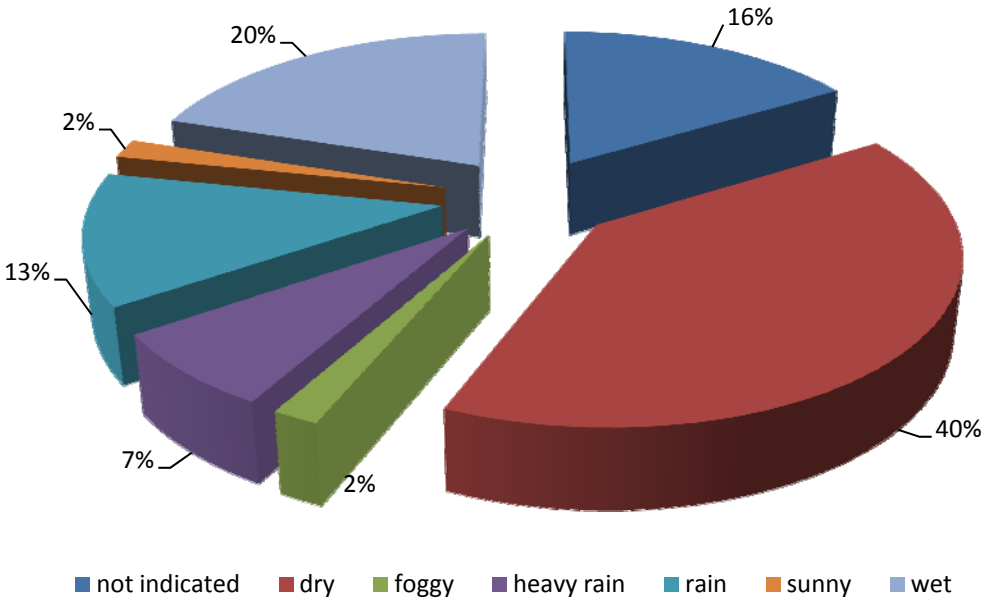
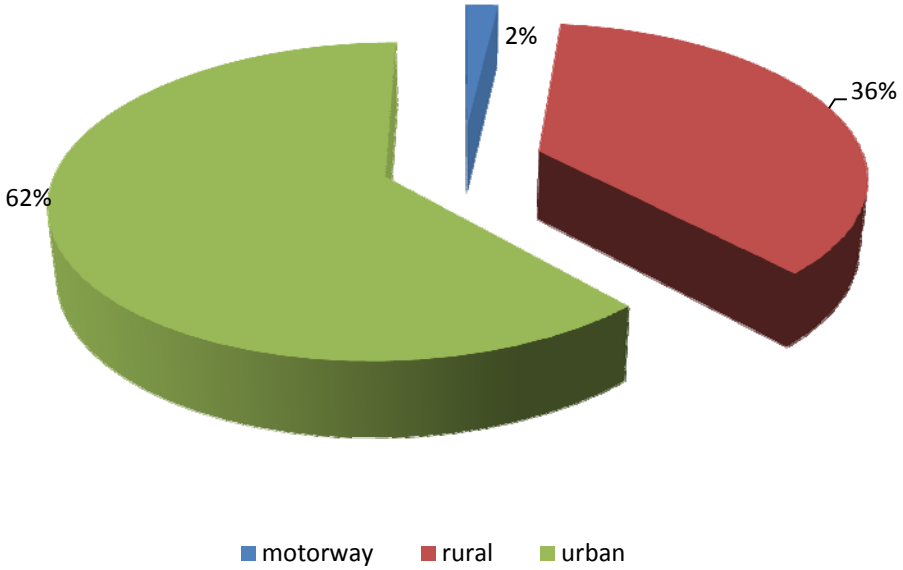


Figure five: The majority of the collisions (n.34 or 62%) occurred on an urban road, while n.20 (36%) occurred on a rural road and one case (2%) occurred on a motorway. The relevance of the type of road is due to the speed limits which are applied. Typically an urban road has a maximum national speed limit of either 30 mph or 40 mph, while a rural road may have a maximum national speed limit of up to 60 mph. Motorways have a maximum national speed limit of 70 mph (as may have certain duel carriageways, depending on their location).

Figure five: Location of Collision



6. Road Conditions

The investigators examine the road where the collisions occur looking for contaminants, surface irregularities, quality and markings.

If the investigators suspect that there is an issue with the road surface, or to attempt to estimate the speed from the tyre marks, they would carry out a skid test, using a Skidman device to measure the coefficient of friction between the tyres and the road surface. Generally this would be applied more for cars, but if the investigators suspected that there was an issue with the traction of the road surface, or if they are to perform calculations based on the length of the tyre marks, then the investigators would conduct skid tests.

If there is a road test conducted at the scene, it is while the road is still closed or at a later stage when the road is open, whereby the investigators will drive through the collision scene to determine whether it is possible to negotiate part of the road through the collision scene at a specific speed. The investigators need to be satisfied that the driver was not travelling in excess of that speed to eliminate this as a factor in the collision and demonstrate that there was no issue with the road surface.

In n.53 cases, the condition of the roads was reported as “good” and in two cases “fair”. In all cases the investigators found that there were no contaminants or irregularities which may have contributed to the cause of the collision.

7. Calculations

7.1 Visibility

In darkness, a normal headlight throw for dipped beam illumination is approximately 45 to 50 metres and for main beam illumination 90 to 100 metres, though the actual values depend on various factors such as the model of the car, the scene topography and the individual driver. A typical perception/response time for an alert driver at night could be 2 to 3 seconds and therefore for example, when driving at a speed of 45 miles per hour a driver may not be able to avoid impacting an object slow moving or stationary in his path.

Typically a vehicle travelling at 60 mph (27 metres per second) would travel distances of 45 metres and 100 metres in approx. 1.7 seconds and 3.7 seconds respectively. The equivalent times at 50 mph (22 metres per second) are approx. 2 seconds (45 metres) and 4.5 seconds (100 metres) respectively. Research indicates that the response distances of an unexpectant driver can be half that of an expectant driver.

A recognised time period for a driver to perceive and respond to an object, hazard or incident is in a range between 0.75 and 1.5 seconds[5]. These timings are based on straightforward daylight conditions. Therefore, the ability of a driver to discern a pedestrian ahead of the car in darkness depends heavily on the clothing being worn by the pedestrian. Darker clothing is more difficult to see than lighter coloured or reflective clothing.

As highlighted in the following figure six, there was no indication of clothing worn by the pedestrians at the time of the collision in n.22 (40%) of cases. In the majority of these cases, the collision occurred in daylight with two exceptions – one of the pedestrians had 443 mg per 100 ml of alcohol in his blood and was lying prone across the path of the car and the other walked in front of a lorry on a pedestrian crossing while the light was red (for pedestrians).

In n.30 (55%) of cases the pedestrians wore dark clothing. Only one pedestrian had reflective elements (a High Visibility vest). In n.3 (5%) of cases the pedestrians wore light clothing (but with no reflective elements).

[5] Olsen, PL: Forensic Aspects of Driver Perception and Response. Lawyers and Judges Publishing Company Inc. 1996

Figure six: Shade of clothing worn by pedestrian

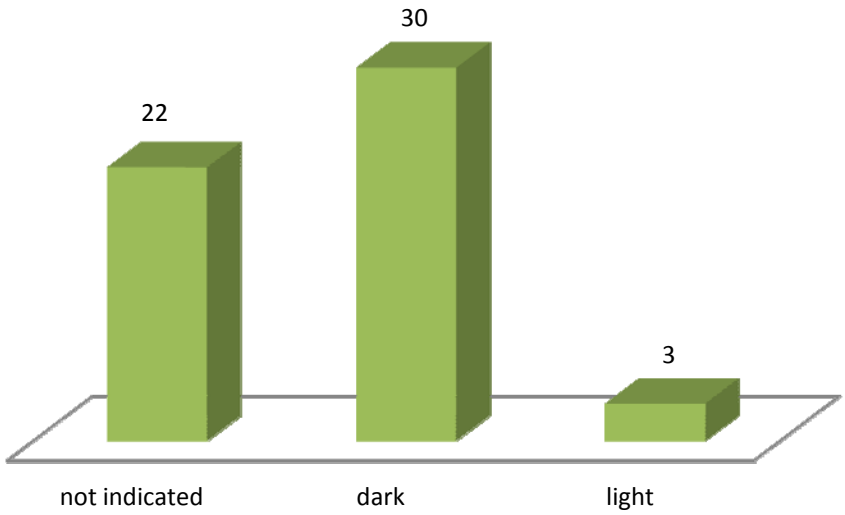


Figure seven: The majority of collisions occurred in darkness n.35 (64%), while the remaining n.20 (36%) collisions occurred during daylight.

Figure seven: Visibility conditions when the collision occurred

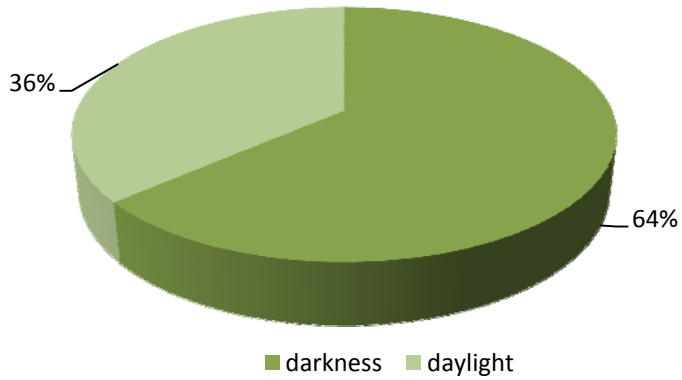


Table one: During the period of darkness, there was information in relation to n.31/35 cases. In the n.14 cases where there were street lights, n.13 cases were on urban roads and in one case there were street lights on a rural road. Of the n.17 cases where there was no street lighting in a period of darkness, n.16 fatalities took place on rural roads, and one on a motorway.

Table one: Street lighting

Street lighting	Darkness	Daylight	Total
Not indicated	4	17	21
	19%	81%	100%
No	17	3	20
	85%	15%	100 %
Yes	14	0	14
	100%	0%	100%
Total	**35**	**20**	**55**
	63.6%	**36.4%**	**100%**

Pearson Chi square: 000; Cramer's V: 000

Table two: Of the cases where the orientation was identified, (n.44/55) indicates that n.8/30 pedestrians were struck from behind in darkness, n.4/30 in front and n.18/30 on the side. During daylight, all cases where the orientation was identified (n.14) were struck on the side.

Table two: Orientation of the pedestrian

	Orientation pedestrian				
	N/a	Back	Front	Side	Total
darkness	5	8	4	18	35
	45%	100%	100%	56%	64%
daylight	6	0	0	14	20
	55%	0%	0%	44%	36%
Total	11	8	4	32	55
	100%	100%	100%	100%	100%

Pearson Chi Square: 027; Cramer's V: 027

7.1.1 Glare

There were n.13 (23.6%) cases in which glare was a contributory factor in the collisions with the pedestrians. With the exception of n.2 cases, these collisions occurred during the hours of darkness and the glare came from the headlights of oncoming vehicles which meant that the driver was distracted. In the two cases that occurred during daylight, the glare came from the sun which was low in the sky and drivers were unable to discern the pedestrians.

With regards the part of the vehicle that impacted the pedestrians, n.33 (60%) occurred at the nearside (left) and n.15 (27.3%) at the offside (right). See table three below.

Table three: Impact

Part of vehicle	Frequency	Percent
n/a	3	5.5
Front	1	1.8
Nearside	33	60.0
Offside	15	27.3
Rear	2	3.6
Rear nearside	1	1.8
Total	55	100.0

7.2 Speed of vehicle

When a pedestrian is struck by a vehicle, part of the vehicle's momentum is transferred to the pedestrian. A calculation can be performed on various pieces of information to provide an estimate of the vehicle's speed, provided the impact between the pedestrian and the vehicle is substantial and not partial or glancing; the pedestrian is not carried on the vehicle and the pedestrian is projected in front of the vehicle and the mass of the vehicle is not similar to that of the pedestrian[6].

The following table four highlights the speed of the vehicles which collided with the n.55 pedestrians. In n.50 (91%) of the incidents, the vehicle was not driven at excessive speed. "Not excessive" means not more than the speed limit at the location of the collision[7], or where the investigator was unable to determine the speed from the distance of the pedestrian throw, the calculation or estimation would be based on the damage sustained (or lack of) by the vehicle, as well as witness

[6] Evans AK and Smith R: Vehicle Speed Calculations from Pedestrian Throw Distance. Proc. Inst. Mech. Engrs. 1999, Volume 213 Part D.
[7] The Highway Code NI sets out the speed limits which apply in Northern Ireland. Rule 124 states You MUST NOT exceed the maximum speed limits for the road and for your vehicle (page 40). http://www.nidirect.gov.uk/highway-code-english-may-2014.pdf?rev=0

statements, CCTV or video footage or in the case of buses and lorries, would include evidence from the tachograph.

The five drivers who exceeded the speed limit all did so where the maximum speed limit was 30 mph and on an urban road and in all five cases the vehicles involved were cars.

The calculations of the speed of those vehicles refer to the absolute minimum speed that the investigator was able to calculate based on the evidence available, although the range of speed may have increased the actual speed to a much higher level.

1. In the case of the vehicle which is indicated below with an absolute minimum speed of 29 mph, it is possible, based on the evidence and relevant calculations that the speed reached may have been 45 mph.
2. In the case where the driver was exceeding the speed limit (33 mph in a 30 mph zone) it was in darkness and foggy and the elderly female pedestrian crossed in front of the car wearing dark clothing.
3. In one case the speed of the car was identified at an absolute minimum of 38 mph in a 30 mph zone. It was daylight and although the road was wet, the pedestrian was wearing light coloured clothing and was crossing the road at a zebra crossing.
4. In one case where the pedestrian had 263 mg per 100 ml of alcohol in his blood at the time of the collision, the driver of the car also had a recorded level of alcohol in his blood (127 mg per 100 ml), his speed was recorded as 44 mph in a 30 mph zone and he left the scene of the collision (hit and run).
5. In the case of the vehicle which had an absolute minimum speed of 45 mph in a 30 mph zone, the evidence from the investigation indicated that the driver may have reached a speed of 56 mph.

Table four: Speed

Speed limit	**Absolute minimum speed (mph)**						
	29	33	38	44	45	Not Excessive	**Total**
Not indicated						2	2
10 mph						1	1
30 mph	1	1	1	1	1	25	30
40 mph						4	4
60 mph						16	16
70 mph						2	2
Total	**1**	**1**	**1**	**1**	**1**	**50**	**55**
	1.8%	**1.8%**	**1.8%**	**1.8%**	**1.8%**	**90.9%**	**100.0%**

7.3 Vehicles involved in the collisions

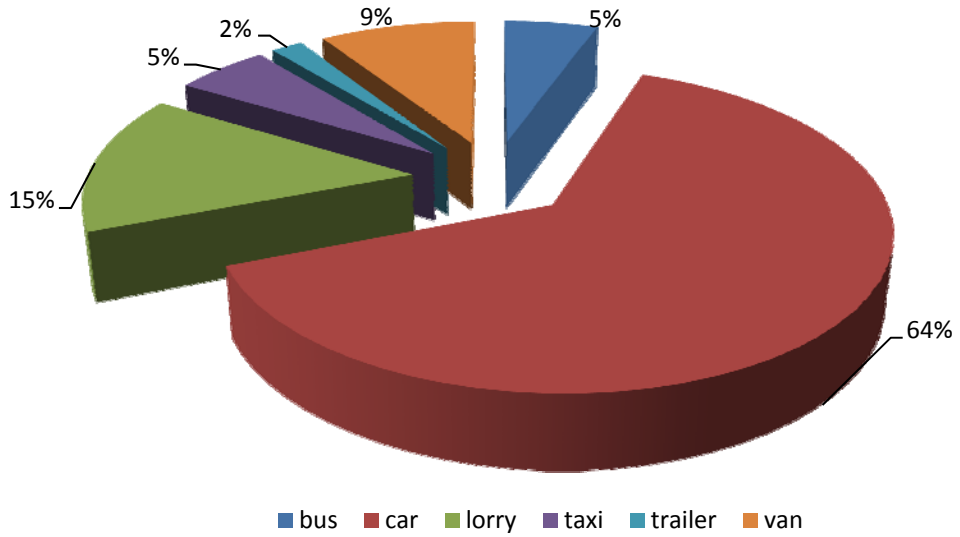
As highlighted in figure eight, there were n.35 (64%) cars involved in collisions with pedestrians, n.8 (15%) lorries, n.5 (9%) vans, n.3 (5%) buses and n.3 (5%) taxis. There was one trailer involved in a collision with a pedestrian – in this particular case, the trailer was carrying livestock and was being reversed onto private land from a road.

There were n.8 cases where a lorry was involved in the collision. In n.3 cases, the pedestrian walked out onto a pedestrian crossing when the light was red for pedestrians. All three were over the age of 70. A fourth elderly female pedestrian, walked out from behind another vehicle parked on the road near a pedestrian crossing.

An elderly male was struck by a lorry on a rural road in darkness. The driver was distracted by the glare of oncoming vehicle lights. In two further cases the pedestrians (both male aged between 25 and 40 years) walked out in front of the lorries. The remaining case refers to a lorry reversing on private land and striking a toddler.

There were three cases where a bus was involved. In two of these cases it was daylight and the weather conditions were dry. The pedestrians were both females, one was middle aged and the other elderly. In both cases, the women walked out in front of the bus while the bus was entering a bus station. The third was a teenage female who walked out in front of the bus at a pedestrian crossing while it was raining and was holding an umbrella towards the bus.

Figure eight: Vehicles involved



8. Pedestrian Characteristics[8]

8.1 Crossing speeds

Where relevant, the investigators will determine the crossing and walking speeds for pedestrians of differing ages, sexes and walking paces. There are quoted values which can determine speed ranges which aid the investigators so they can calculate the position of the pedestrian on impact.[9]

8.2 Age and sex of pedestrians

The following table five is a breakdown by age group of the pedestrians involved in fatal collisions reported in this study. The elderly represented n.17/55 (30.9%) of the cases and were aged between 70 and 100 years. Children aged between one to 16 years represented the smallest group (12.7%); the group representing adults (including one 17 year old) total n.31/55 (56.4%) of the fatalities.

Table five: Age and sex of pedestrians

Sex	Age			Total
	1 to 16	17 to 69	70 to 100	
Female	3	7	8	18
	16.7%	38.9%	44.4%	100.0%
Male	4	24	9	37
	10.8%	64.8%	24.3%	100.0%
Total	**7**	**31**	**17**	**55**
	12.7%	**56.4%**	**30.9%**	**100.0%**

[8] For a summary of all cases, see Annex one
[9] Eubanks JJ (1994): Pedestrian Accident Reconstruction. Lawyers and Judges Publishing Inc. Chapter 2 p.39

8.2.1. Children aged one to 16 years

According to the Police Recorded Injury Road Traffic Collision Statistics in Northern Ireland, over the period 2008 to 2012, n.10 pedestrians up to the age of 16 were killed in Northern Ireland[10]. The FSNI cases refer to n.7 fatalities.

The seven pedestrians aged between one and 16 include three toddlers (aged less than three years) and one slightly older child. Three of these children were in the care of an adult relative (not parent) the remaining child was in the company of an older sibling when the collision occurred.

As mentioned in section 7.3, in one case a toddler was struck by a reversing lorry on private land[11]. The slightly older child was on the driveway in front of a house and the speed of the car was approximately 7 mph: the driver did not see the child. A toddler ran out onto the road and the adult relative was unable to stop her in time. The remaining toddler was playing out the front of her house in a cul de sac with her sibling and the driver of the car was unaware that she was in the vicinity prior to the collision.

There was a teenage male going to school in the morning on an urban road, he walked in front of a car as his view was obstructed by another car; another teenage male pedestrian was struck from behind while walking on a rural road late at night with a friend. At the time, he was wearing dark clothes and had his back to the oncoming car; as mentioned in section 7.3, a teenage female walked in front of a bus.

In all the above cases the vehicles were reported as not having exceeded the speed limit.

8.2.2 Elderly pedestrians

There were n.17/55 (31%) elderly pedestrians (aged over 70 years) involved in collisions with vehicles. n.8/17 were aged between 80 and 100 (the age of two of the pedestrians was only indicated as “elderly”). The remaining n.7 were aged between 70 and 79 years. Four of those aged 80 and over were in the path of the vehicle on the road. Overall, n.13/17 elderly pedestrians were struck between 7 a.m. and 6 p.m.

In n.5 cases, the elderly pedestrians (n.2 females and n.3 males) crossed the road in front of a lorry. Three walked out onto a pedestrian crossing when the traffic lights were red (for pedestrians); one was near a pedestrian crossing but walked in front of the lorry from behind another vehicle, while one male crossed in front of the lorry in heavy traffic. In this particular case it was dark, it was raining, there was heavy oncoming traffic and road works at the location of the collision and the pedestrian was wearing dark clothing.

Another elderly male pedestrian who was wearing dark clothing was walking on a rural road in darkness and was stuck from behind. The lorry driver was unable to discern the pedestrian due to glare from the lights of oncoming vehicles.

As mentioned previously in section 7.2, a driver was exceeding the speed limit (33 mph in a 30 mph zone) it was in darkness and foggy and the elderly female pedestrian crossed in front of the car wearing dark clothing. In one case where an elderly male pedestrian crossed an urban road, the fatality was caused by a car driver who pleaded guilty to careless driving in an urban area.

There were n.4 cases where the car driver was unable to discern the pedestrian due to either glare from the lights of oncoming vehicles or (in n.2 cases) glare from the sun. In these latter cases, one male pedestrian (aged 84) was in the shadows as the vehicle was entering the road from a minor road. A female pedestrian (aged 83) was crossing the road, but appeared to have bent down as the vehicle turned into the road from a minor road.

[10] n.3 in 2008, n.3 in 2009, n.1 in 2010, n.0 in 2011, n.3 in 2012 (no pedestrian aged up to 16 was killed in 2013)
[11] This case may not be included in the official PSNI statistics for pedestrian fatalities because it did not occur on a public road.

In two cases the vehicle reversed into the elderly pedestrians (one male and one female) – one of the vehicles was a taxi in a car park and the other – as mentioned above, was a trailer on private property reversing from a road. Both were reversing at a very low speed.

8.3 Intoxicated pedestrians

The information regarding the blood alcohol content levels was made available from the Pathologists' reports which were provided with the Coroners' inquest findings as highlighted in table six. There was information for n.17/55 pedestrians (31%) found to have alcohol in their blood at the time of the collision.

The youngest pedestrian with alcohol found in his blood was 17 years old and the oldest, a male over 70 years. However in all cases where the collision occurred very late at night or early morning, the age ranged from 17 to 45, (n.10 cases). All other cases when the collision occurred between late afternoon and 9 p.m. the age was 50+ (n.7 cases).

There was only one female pedestrian with alcohol found in her blood (223 mg per 100 ml). In n.11 cases the collision occurred on a rural road. All cases occurred during the hours of darkness. None of the n.17 intoxicated pedestrians were wearing reflective clothing.

Table six: Blood Alcohol Content (BAC): mg per 100 ml

Age	Time of collision	Visibility	BAC level	Position of pedestrian on impact	Contributory factors
17 to 25	01.10	darkness	177	Upright	Pedestrian on road
	03.20	darkness	184	Upright	Pedestrian on road
	01.20	darkness	252	Upright	Glare from oncoming lights
	03.50	darkness	234	Upright	Pedestrian on road
	02.20	darkness	263	Upright	Hit and run, car driver charged driving dangerously in an urban area
30 to 45	01.50	darkness	190	Upright	Driver intoxicated and lost control
	22.55	darkness	242	Prone	Driver distracted from oncoming lights
	23.15	darkness	223	Upright	Pedestrian on road
	04.25	darkness	192	Prone	Glare from oncoming lights
	22.15	darkness	165	Upright	Pedestrian standing in the middle of the road
50 To 60	18.45	darkness	249	Upright	Pedestrian on road
	21.00	darkness	269	Upright	Pedestrian standing in the middle of the road
	20.00	darkness	453	Sitting	Glare from oncoming lights
	21.00	darkness	443	Upright	Pedestrian on road
	18.30	darkness	184	Prone	Glare from oncoming lights
	18.05	darkness	159	Upright	Hit and run, pedestrian on road
70+	16.50	darkness	63	Upright	Lights were green for lorry

NB: In Northern Ireland the legal limit of blood alcohol content for a vehicle driver is 80 mg per 100 ml.

In the case where the pedestrian had 263 mg per 100 ml of alcohol in his blood at the time of the collision, the driver of the car also had a recorded level of alcohol in his blood (127 mg per 100 ml), his speed was recorded as 44 mph in a 30 mph zone and he left the scene of the collision (hit and run).

In the case where the pedestrian was found to have had 190 mg per 100 ml of alcohol in his blood, he was walking on the footpath and the driver of the car that struck him also left the scene of the

collision. The young male driver had also consumed alcohol and was recorded as being two times over the legal limit.

In three of the collisions, the pedestrians were lying on the road and the vehicles drove over them. In one case the pedestrian was sitting on the road and in two further cases the pedestrians were standing in the middle of the road.

The average Blood Alcohol Content for these n.17 pedestrians was 232 mg per 100 ml.

8.4 Other collisions

Table seven indicates n.9 other collisions which were not included in the previous sections in which n.8 pedestrians were struck by cars and one was struck by a van. The age of these pedestrians ranged from 18 years to 62 years. There were five male and four female pedestrians. Of the six cases which occurred in darkness, only one pedestrian was wearing reflective clothing, the remaining five were wearing dark clothing with no reflective elements.

In all these cases the vehicles were reported as not having exceeded the speed limit. In four cases the pedestrian crossed the road in front of the vehicle and the driver was unable to stop in time to avoid the collision, in n.2 of these cases a contributory factor was the glare of the lights from one or more oncoming vehicles.

Overall there were four cases (including the two previously mentioned) where the driver was distracted by the glare of lights from oncoming traffic which may have affected his/her ability to stop in time to avoid the collision.

In one case the pedestrian was walking her dog on a rural road in the same direction of the car which subsequently struck her from behind. She was wearing dark clothing and there were no street lights.

In the case where the driver had a heart attack and lost consciousness, the pedestrian was walking on the footpath and the car careered off the road and hit the pedestrian before hitting a wall.

Table seven: Collisions and contributory factors of n.9 adult pedestrians

Age	Time	Visibility	Season	Road	Clothing	Contributory Factors
18 to 25	16.10	darkness	winter	rural	(Hi Viz vest)	Pedestrian walked in front of car from behind a van
	07.50	darkness	winter	rural	dark	Driver distracted due to glare from lights of oncoming vehicle
	22.10	darkness	spring	urban	dark	Driver distracted by glare from oncoming lights and pedestrian walked in front of car
30 to 50	10.12	daylight	autumn	urban		Driver lost consciousness due to heart attack
	09.10	daylight	summer	urban		Pedestrian walked in front of car
51 To 62	17.15	darkness	winter	urban	dark	Driver distracted due to glare from lights of oncoming vehicle
	20.10	darkness	autumn	rural	dark	Pedestrian walking her dog with her back to the car on a dark road
	12.40	daylight	winter	urban		Pedestrian was walking across a pedestrian crossing. Driver entered the road from a junction and appeared not to have seen the pedestrian prior to the collision.
	06.45	darkness	winter	rural	dark	Driver distracted glare from lights of oncoming vehicles. Pedestrian crossed in front of car.

NB: There are two cases in which the outcome of the coroners' inquests had not been concluded at the time of writing this report.

9. Summary

This report analyses n.55 cases of pedestrian fatalities, equal to 73% of the total in Northern Ireland between 2008 and 2012 which were attended by the Forensic Science Northern Ireland (FSNI) Road Traffic Collision investigators.

There were n.39 Coroners' inquest reports requested and the findings were made available in relation to the collisions analysed in this study in n.37 cases.

Of the n.55 fatalities, n.13 (23.6%) occurred from 10 p.m. up to 6 a.m. i.e. during the night and early morning, while n.16 (29.1%) occurred between 6 a.m. to 3 p.m.; 23.6% occurred from 3 p.m. to 7 p.m. and the remaining 23.6% occurred between 7 p.m. and 10 p.m.

There were n.17 (31%) pedestrian fatalities in spring; n.15 (27%) in winter; n.12 (22%) in autumn and n.11 (20%) in summer

In n.22 (40%) collisions, the weather was dry; in n.11 (20%) collisions, there was either heavy rain or rain; in a further n.11 (20%) cases, the conditions were indicated as wet; in one case (2%) it was foggy and in another it was a sunny day (2%).

The majority of the collisions (n.34 or 62%) occurred on an urban road, while n.20 (36%) occurred on a rural road and one case (2%) occurred on a motorway.

In n.53 cases, the condition of the roads was reported as "good" and in two cases "fair". In all cases the investigators found that there were no contaminants or irregularities which may have contributed to the cause of the collision.

In n.30 (55%) of cases the pedestrians wore dark clothing. Only one pedestrian had reflective elements (a High Visibility vest). In n.3 (5%) of cases the pedestrians wore light clothing (but with no reflective elements).

Most collisions occurred in darkness n.35 (64%), while the remaining n.20 (36%) collisions occurred during daylight.

During the period of darkness, there was information regarding lighting in relation to n.31/35 (86%) cases. In the n.14 cases where there were street lights, n.13 cases were on urban roads and in one case there were street lights on a rural road. Of the n.17 cases where there was no street lighting in a period of darkness, n.16 fatalities took place on rural roads, and one on a motorway.

There were n.13/55 (23%) cases in which glare was a contributory factor in the collisions with the pedestrians. With the exception of n.2 cases, these collisions occurred during the hours of darkness and the glare came from the headlights of oncoming vehicles which meant that the driver was distracted.

Of the cases where the orientation was identified, (n.44/55) indicates that n.8/30 pedestrians were struck from behind in darkness, n.4/30 in front and n.18/30 on the side. During daylight, all cases where the orientation was identified (n.14) were struck on the side. The side of the vehicle where impact occurred indicates that 60% of pedestrians were stuck by the nearside (left) and 27.3% by the offside (right) of the vehicle.

In n.50 (91%) of the incidents, the vehicle was not driven at excessive speed. The five drivers who exceeded the speed limit all did so where the maximum speed limit was 30 mph and on an urban road and in all five cases the vehicles involved were cars.

There were n.35 (64%) cars involved in collisions with pedestrians, n.8 (15%) lorries, n.5 (9%) vans, n.3 (5%) buses and n.3 (5%) taxis. There was one trailer involved in a collision with a pedestrian.

Children aged between one to 16 years represented the smallest group (12.7%); the group representing adults (including one 17 year old) total n.31/55 (56.4%) of the fatalities.

According to the Police Recorded Injury Road Traffic Collision Statistics in Northern Ireland, over the period 2008 to 2012, n.10 pedestrians up to the age of 16 were killed in Northern Ireland. The FSNI cases refer to n.7 fatalities.

There were n.17/55 (31%) elderly pedestrians (aged over 70 years) involved in collisions with vehicles. In n.5 cases, the elderly pedestrians (n.2 females and n.3 males) crossed the road in front of a lorry.

There were n.17/55 pedestrians (31%) who were found to have alcohol in their blood at the time of the collision. The youngest pedestrian with alcohol found in his blood was 17 years old and the oldest was a male aged 76 years. There was only one female pedestrian with alcohol found in her blood (223 mg per 100 ml). In n.11 of these cases, the collision occurred on a rural road. All n.17 cases occurred during the hours of darkness. None of the intoxicated pedestrians were wearing reflective clothing.

In three of the collisions where the pedestrian was intoxicated, the pedestrians were lying on the road and the vehicles drove over them. In one case the pedestrian was sitting on the road and in two further cases the pedestrians were standing in the middle of the road. The average Blood Alcohol Content for these n.17 pedestrians was 232 mg per 100 ml.

There were n.9 other collisions which were not included in the previous sections in which n.8 pedestrians were struck by cars and one was struck by a van. The age of these pedestrians ranged from 18 years to 62 years. There were five male and four female pedestrians. Of the n.6/9 cases which occurred in darkness, only one pedestrian was wearing reflective clothing, the remaining five were wearing dark clothing with no reflective elements.

10. Research Review

According to the American report Pedestrian Injuries and Fatalities Guide No. 51 (2007)[12] *"no single factor is completely responsible for the problem of pedestrian-vehicle crashes resulting in injuries and fatalities. A combination of unsafe pedestrian behavior, vehicle and driver factors, problematic physical environments, and other special conditions all contribute to them. This list of factors is not exhaustive, but instead highlights some common causes of pedestrian-vehicle crashes that result in injuries and fatalities".*

The findings from a study in South Australia by Hutchinson, TP, Kloeden CN and Lindsay VL (2009) regarding the groups of pedestrians killed were remarkably similar to this study. In fact, they indicate that

"..most of the fatalities fell into three overlapping groups: occurring at night, or involving drunkenness of the pedestrian, or the pedestrian was elderly. In 2003-2006, in the Adelaide Metropolitan area, 40 pedestrian fatalities occurred (the state wide figure was 49) and only 11 did not fall into at least one of those three types.

Of the 40 pedestrian fatalities in 2003-2006, 12 were drunk. In three or four of these cases, the pedestrian was sitting or lying on the road at night. Thus, as has been found many times previously, drunkenness is common among pedestrian fatalities. In a substantial fraction of these cases, the degree of intoxication is extreme, as evidenced by a very high BAC or by behaviour in the seconds before the accident".

10.1 Cognitive Impairment

Driver visibility, elderly and intoxicated pedestrians have a common theme which is that for different reasons there are problems of cognitive impairment.

From the research in this section, evidence indicates that vehicle drivers are restricted at night time or in darkness, because their vision is impaired due to problems which are exacerbated by the lack of ambient illumination, the limited power and aim of headlights, the conflict between positive and negative contrast and by night myopia and glare.

Elderly pedestrians experience cognitive and executive function decline as they age, and functional limitations are most prevalent towards the end of normal life.

Finally intoxicated pedestrians suffer cognitive impairment because alcohol slows brain functions, reduces judgement, increases risk taking, affects sense of balance and increases sleepiness. Alcohol reduces the ability to judge the speed and distance of vehicles.

10.1.1 Conspicuity

In their review of vision research literature, Langham M.P and Moberly N.J (2003) refer to Engel (1971 cit.op) who defined conspicuity in terms of the size of a background area within which a target can be detected during a single, brief presentation. Conspicuous objects therefore do not require extensive visual search to be successfully detected: instead, they `grab' the attention of the observer in a proscribed, limited time period.

This is in contrast to Engel's definition of visibility, which relates to the ease of detection when the observer is aware of the target's location. Subsequent laboratory experiments have demonstrated that target conspicuity is sensitive to a number of variables, such as the characteristics of the target's background (Bloomfield 1973 cit.op), the density of background elements (Jenkins and Cole 1982 cit op.) and the luminance of the background (Cole and Jenkins 1984 cit.op).

[12] http://www.popcenter.org/problems/pedestrian_injuries/

As highlighted above, the ability to visualise objects and/or potential hazards by drivers especially at night and in darkness is the subject of research and in the case of the ability of the driver to "see" pedestrians in darkness, Green M et al (2008)[13] argue that:

"People fail to slow sufficiently at night because they are unaware how poor their vision has become. Humans have two distinctly different types of vision, focal and ambient. They differ in the visual tasks that they perform, the parts of the visual field they examine and their pathways through the brain.

Roughly speaking, focal vision tells us "what is there" while ambient vision tells us "where we are". Focal vision is used for detecting and recognizing objects, such as pedestrians. It is centered along the line of sight, so when we want to recognize an object, we turn our eyes to look directly at it. Focal vision declines rapidly in dim light. In fact, many people with impaired vision who are unable to receive driver's license still have vision superior to that of a normal person at night.

Ambient vision is used for determining location in space and orientation in the environment and to perform tasks such as steering a car. It operates out in the visual periphery and needs only detect faint large shapes. Most significantly, ambient vision is not greatly impaired when light level declines.

Drivers can steer the car just as well at night as during the day and feel little need to slow. They do not realize that their ability to see pedestrians has been greatly reduced".

However, according to the authors, *"light colored clothing should increase visibility since more light is reflected back to the driver's eye. This view, however, is an oversimplification because increased light levels can actually decrease pedestrian visibility.*

The reason is that people don't see light; they see contrast. A driver may see a pedestrian in either positive or negative contrast. Negative contrast occurs when a dark object lies on a bright background while Positive contrast occurs when a bright object lies on a dark background. In the driving literature, negative contrast is often called "silhouette" and positive contrast is termed "reverse silhouette (...).

In real road situations, positive and negative contrast can compete, rendering the pedestrian invisible. Imagine a car on a dark rural road at night. The driver will likely see a pedestrian in positive contrast because the light from the headlamps reflects off clothing back to the eye and because the background is dark - there is little or no background lighting. In this case, pedestrian clothing is an important factor in visibility. If wearing light clothes, then most of the headlamp illumination reflects back to the driver's eye. Visibility will be far lower for pedestrians wearing dark clothes that reflect less light (...)."

With regards to remedial measures, the authors highlight the fact that *"Safety authorities often suggest that pedestrians would become more conspicuous if they would wear reflective material that sends more light back to the driver's eye. Research typically confirms that pedestrians are visible at greater distances when they wear a reflective tag or vest.*

However, there are some drawbacks to reflective material. One is that reflective material sends light primarily in one direction. If the headlamps hit the material at the wrong angle, the reflected light goes in the wrong direction and does not hit the driver's eye, and the reflector will appear dark. Further, if the reflective material covers a small part of the body, then the driver may detect its light but not recognize it as being a person (...).

The use of reflective material is likely to amplify pedestrian overconfidence. Introduction of new safety devices often makes people feel more secure (...). A pedestrian wearing reflective material may be more likely to assume high visibility and take more risks".

[13] http://www.visualexpert.com/resources/pedestrians.html

The authors conclude *"The reasons for pedestrian invisibility are complex, but most lie in the normal operation of human vision and attention. For a driver to avert an accident, the pedestrian must be seen far ahead, a time when he is likely to appear in peripheral vision.*

At night, the problems are exacerbated by the lack of ambient illumination, the limited power and aim of headlights, the conflict between positive and negative contrast and by night myopia and glare. Lastly, pedestrians contribute significantly to their own invisibility by choice of clothing, and risk-taking due to overconfidence in their conspicuity and to drinking or taking drugs".

10.1.2 The elderly

In the Department for Transport's Research Report No.37: Older Pedestrians, A Critical Review of the Literature[14], the authors make the point that

"There are more old people than ever before, and they are expected to form an increasing proportion of the population. Many give up or reduce driving at some stage, and become dependent on other forms of travel. Their travel is important, but much of it will be on foot, a more hazardous form of transport than the car. Older people have a high risk of pedestrian accident involvement, and accident statistics show that old people are at greater risk of fatal injury than other pedestrians. This is partly explained by their greater frailty".

The Monash report "Cognitive Impairment: Older Pedestrian Behaviour and Crash Risk"[15] made reference to research from Carthy et al. (1995 cit op.) who found that *"older people (estimated to be aged 65 years and older) were disproportionately represented in potentially unsafe crossings (those necessitating some form of evasive action either by the driver or by the pedestrian) compared to younger pedestrians (estimated to be aged 30-55 years). They argued that older pedestrians experienced problems selecting safe gaps because they lacked appropriate consideration of the speed of approaching vehicles.*

They also found that when crossing without the aid of formal crossings, older pedestrians often crossed the first half of the road without consideration of the outcome for the second half. They noted some extreme instances of older pedestrians successfully crossing the near-side of the road but being caught in the middle waiting for oncoming far-side traffic and panicking to reach the other side of the road".

In the conclusions of the Monash study the authors indicate that evidence, albeit limited, suggests the following may play some role in older pedestrian safety:

- *"Most people experience some level of cognitive and executive function decline as they age, and functional limitations are most prevalent towards the end of normal life.*
- *Normal age-related declines in single cognitive and executive functions appear to have little effect on performance in less demanding traffic situations.*
- *Declines in multiple relevant cognitive and executive functions appear to have some effect on performance in demanding traffic situations. The most relevant declines for road-crossing performance include: slowed information processing, declines in attentional processes, memory problems, difficulty in selecting and integrating information, poor decision-making and slowed response initiation.*
- *Most older adults have the capacity to compensate for declines in cognitive and executive functions, although the ability to compensate may be inadequate where there are multiple declines in several cognitive and executive functions, especially amongst those approaching the end of their lives.*
- *Adoption of compensation strategies which rely on insight or awareness of abilities. This insight may be affected were there are multiple declines in cognitive and executive functions.*
- *Cognitive and executive function impairment associated with some diseases and medical conditions may have functional implications for older pedestrian performance".* (page 38)

[14] http://webarchive.nationalarchives.gov.uk/+/http:/www.dft.gov.uk/pgr/roadsafety/research/rsrr/theme1/olderpedestriansacriticalrev.pdf
[15] http://www.monash.edu.au/miri/research/reports/muarc244.pdf

10.1.3 Alcohol related pedestrian fatalities

A survey conducted in 2012[16] on behalf of the Department of Health, Social Services and Public Safety in Northern Ireland, examined the amount people drink, when, where and what they drink and who they drink with. It also examined how drinking behaviours vary across different sections of the public, the proportion of people who binge drink, problem drinking, and perceptions of drinking.

The survey highlighted the following:

"Alcohol Consumption:

- *More than seven out of ten (74%) adults drink alcohol.*
- *A larger proportion of males (78%) than females (72%) drink alcohol.*
- *Younger adults (18-29 years) are more likely to drink than older adults (60-75 years).*

Frequency of Drinking:

- *Around half (52%) of drinkers reported drinking alcohol at least once a week or more frequently (6% of respondents reported drinking on an almost daily basis).*
- *A greater proportion of male respondents (8%) compared to females (5%) reported drinking alcohol daily or on most days.*

Drinking Behaviour
(The following results are based on those respondents who drank alcohol in the week prior to the survey).

Days on which drinking occurs:

- *Most drinking occurs over the weekend and peaks on Saturdays.*

Type of drinks consumed:

- *The most common drinks consumed were wine (48%) and beer (47%).*

Where and with whom people drink:

- *Most of those who drank in the week prior to the survey had either consumed alcohol at home (64%), in the pub (20%) or at someone else's home (20%).*

Drinking Levels
Recommended daily drinking limits:

- *Around eight in ten respondents (78%) reported having reached or exceeded the recommended daily limit for drinking on at least one occasion in the week prior to the survey.*
- *18% of male drinkers reached or exceeded the recommended daily limits on three or more days that week, compared to 16% of female drinkers.*
- *The recommended daily limits are exceeded most often on a Saturday (53% of drinkers) and on a Friday (31% of drinkers)".*

In the United States of America, over a third of the pedestrians killed in 2011 had blood alcohol levels above the legal limit for driving, according to government data.

"Thirty-five percent of those killed, or 1,547 pedestrians, had blood alcohol content levels of .08 or higher, the legal limit for driving, according to data reported to the National Highway Traffic Safety Administration[17] by state highway departments.

Among the 625 pedestrians aged 25 to 34 years old who were killed, half were alcohol impaired. Just under half the pedestrians killed who were in their early 20s and their mid-30s to mid-50s were also impaired (...). By comparison, 13 percent of drivers involved in crashes in which pedestrians were killed were over the .08 limit".

[16] http://www.northernireland.gov.uk/news-dhssps-180112-adult-drinking-patterns
[17] http://www.usatoday.com/story/news/nation/2013/08/05/drunk-pedestrian-fatalities/2621673/ and http://www.nhtsa.gov/Pedestrians

In Australia the Pedestrian Council of Australia highlights that:

- *"over 20% of pedestrians who are killed on our roads have a BAC exceeding .15%. Most of these people were so inebriated, they were sleeping, playing, crawling, and falling onto the road when hit.*
- *Clearly, people this inebriated will not be retaining any advertising or awareness messages, so the campaign encourages their mates to see they get home safely".*

The Council recognises that there is a serious problem with alcohol related pedestrian fatalities and in 2011 launched the "NEVER LET A MATE WALK HOME DRUNK" Community Service Announcement, nationally[18].

The campaign points out that:

- *"Alcohol slows brain functions, reduces judgement, increases risk taking, affects sense of balance and increases sleepiness. Alcohol reduces your ability to judge the speed and distance of vehicles.*
- *All pedestrians impaired by alcohol are at risk*
- *Young males are particularly over-represented in alcohol-affected pedestrian deaths*
- *The majority of alcohol-related pedestrian deaths occur at night*
- *Just as with drink drivers, the majority of alcohol-affected pedestrians are killed in peak social drinking times – between Thursday night and Sunday morning."*

The campaigners also asked local authorities across Australia to support this campaign by stencilling the logo (NEVER LET A MATE WALK HOME DRUNK) in yellow on the footpaths outside pubs and clubs in their regions[19].

According to a report published in 2006 on behalf of Transport for London[20]

"*Despite alcohol having an obvious effect on pedestrian casualties, comparatively little research has been conducted on the issue, possibly because of difficulties involved in modifying legislation and behaviours of pedestrians. National data for Great Britain shows that the incidence of alcohol amongst fatally injured adult pedestrians is increasing: 46% of fatally injured pedestrians had BACs in excess of 9mg/100ml in 1997 compared with 39% a decade earlier (DETR, 1999 cit op.)".*

By identifying specific regions in the UK, for example Scotland the authors highlighted that *"(...) findings have been reported by The Scottish Office who found that pedestrian casualties were significantly more likely to have consumed alcohol than any other of the casualty groups. Nearly a third (31%) of all pedestrian casualties had consumed alcohol prior to their collision compared to 5% of drivers and 9% of car passengers (The Scottish Office, 1998 cit op.)".*

[18] http://www.walk.com.au/pedestriancouncil/page.asp
[19] http://www.walk.com.au/pedestriancouncil/images/elements/contentpics/2011/dont_let_a_mate_stencil.pdf
[20] https://www.tfl.gov.uk/cdn/static/cms/documents/factors-influencing-pedestrian-safety-literature-review.pdf : Factors influencing pedestrian safety: a literature review by A Martin (TRL Limited); PUBLISHED PROJECT REPORT PPR241

11. Focus Group discussion[21]

Suzanne Anderson: Coroner, Coroner's Service Northern Ireland
Damian Coll: Road Traffic Collision Investigator, Forensic Science Northern Ireland
Lynda Hurley: Dept. of the Environment, Road User Behaviours Policy & Road Safety Strategy Branch
Seamus Leheny: Policy and Membership Relations Manager, Freight Transport Association
Greg McClelland: Road Safety Policy Manager, Dept. for Regional Development (DRD), Transport NI

The focus group discussed the following sections:

1. Environment
2. Visibility
3. Speed
4. Vehicles
5. Children
6. The elderly
7. Intoxicated pedestrians

The group then summarised the study and each gave suggestions for conclusions and recommendations.

The overall reaction to the report by the group was that there were no surprises, which was to be expected in consideration of the fact that the participants are all involved in road safety prevention or road traffic collision fatalities.

> *"It's the information that comes out of it, the trends and recommendations and how can they be used to improve road safety and reduce fatalities for pedestrians, not an easy task".*
>
> *"It is interesting to see them broken down, that is not something that we (Coroner's Service) do, simply because we do not have the time to invest in a study like this, so it is very interesting".*
>
> *"One thing that it has given me which is not in the PSNI stats, is a picture of the blood alcohol levels. I would not have been able to access that anywhere else".*
>
> *"A very useful piece of research, there was a certain gaps in our knowledge and it certainly confirmed a lot of my perceptions such as dark clothing, the levels of intoxication and the age as well – the elderly seem much more vulnerable".*
>
> *"The big issue for us at the moment in relation to the report here – I notice that four of the pedestrians were killed at pedestrian crossings and were elderly. What we've lobbied the EU is that we would like to re-design the cab, so that the driver would be able to see anybody standing in front of him or a cyclist at the side of the vehicle (...). So this is really of interest and I suppose we want to see how these accidents happen and why, so that we can lobby government".*

.

[21] Inspector Rosie Leech, Road Policing, Police Service Northern Ireland (PSNI), was unable to attend the Focus Group due to Force Majeure, but her comments have been subsequently included, specifically in section one (Environment).Other organisations invited were: RoSPA, Sustrans, The Road Safety Council, BRAKE and Age NI. RoSPA, Sustrans and the Road Safety Council confirmed their interest in the study, but did not attend the meeting.

1. Environment (time, weather, roads)

"PSNI is the only body that collect stats about road traffic collisions, it is their responsibility and all the information except some of the information the blood alcohol content, is all readily available with the PSNI stats. PSNI attend all the road traffic collisions and they are the ones responsible for recording information including the time of day etc when the collision actually happened".

"So there is no other body that is carrying out any research in Northern Ireland into the information in light of the PSNI stats about those collisions?"

"PSNI are the sole source of collision statistics, recorded at the scene and subsequently as a result of enquiries. These anonymised statistics are shared under data sharing arrangements with DoE Road Safety Branch and with DRD Transportni. DoE use the stats within their own statistics research staff and also share with Lyle Bailie who analyse them to formulate the target for new advertising campaigns. DRD use the stats to inform road improvements and collision remedial sites.

In terms of other research, PSNI do service requests from academics, local action groups, commercial interests etc. Our (PSNI) own analysts also use the data to direct police enforcement strategies".

"After every serious collision (DRD) traffic engineers go out to the site to identify anything we as a road authority could do to prevent a reoccurrence of a similar collision. For example if the pedestrian just wasn't seen in time, there may be an opportunity to provide lighting or improve stopping sight distance. We have our own collision remedial programme where we treat targeted collisions at cluster sites. With treatments like this, we have considerably reduced the problem with right turning vehicles. We get a constant demand for footpaths on rural roads".

"It is not unexpected that the majority of collisions are urban, because these areas are highly populated, whereas rural roads do have less pedestrian traffic".

2. Visibility

***"**Dark clothes and pedestrians at night is very high risk. The visibility goes both ways, you have the driver visibility of the pedestrian, but then you also have the visibility of the pedestrian of the vehicle. It can seem very visible to the pedestrian, but quite often the pedestrian is walking with his back to the vehicle."*

"..glare is a big issue, if you combine that with visibility (...). So the way we are seeking to address the glare problem is to improve visibility on the roads so that people can actually see where the centre line is. It's not that they are driving fast, they just can't see."

"I suspect that the vast majority of drivers don't realise the distance that they can see ahead using dipped beam headlights. They think that they are much better at judging the distance which they can stop at the speed they are driving at. This is an issue for the driving test. A lot of drivers expect to be able to stop within the distance that they can see ahead".

***"**So it was the driver behaviour and adjusting their speed and driving practices to the conditions that they are driving in. So if they are driving at night they need to make sure they don't look directly at the headlights of oncoming traffic and driving in sunlight which is low, they should be reducing their speed so that they can see what's happening, so it is about driver behaviour".*

"As far as education is concerned, I would suggest that it should be brought to the public's attention that walking at night on a road is a very dangerous thing to do".

.."Our response to what we consider the problem (is) to try to address it. PVC bollards at junctions have reflective materials on them and are also very effective at giving further information to drivers".

"Children and elderly, it's our responsibility with traffic calming measures in urban areas and street lighting too. There is a different culture between here and say England in that we tend to light every 'hole in the hedge' here, whereas in England there is a lot of resistance for street lighting in villages. You probably notice it from satellite coverage, Northern Ireland is probably the most densely lit part of Europe".

3. Speed

"There is a difference between breaking the speed limit and driving at excessive speed for the conditions of the road at the time. In fact if the report is saying to me the driver didn't break the speed limit, I wouldn't have any dispute with that. The speed limits for a road are clear. But there is a responsibility on road users to drive in accordance with the conditions of the road.

So it could be rain or it could be the fact that the hedges haven't been trimmed, the visibility isn't good because of the lighting. Those are all things that make you adjust your speed. The speed limit is set as a maximum speed. So if the report was saying to me that the driver didn't break the speed limit, I would be happy with that. But if you say excessive speed, then that is open to interpretation".

"There are crashes where the vehicle has exceeded the speed limits, but the vast majority have not".

"I think that the UK National speed limit applies sign, which is the black line across the white background is a very useful sign as it puts the responsibility on drivers that although there is a maximum speed limit, you should drive at the appropriate speed for the conditions and geometry of the road. The reason why I flagged this up is because in the Irish Republic when they metricated their speed limits, they posted a speed limit on every road and the outcome of that was that drivers were treating it as a target. The road had been assessed as being capable of being driven at 80 kph even though there was grass growing up the middle of it and then collisions went up. So now they are considering re-introducing our sign."

4. Vehicles

"Probably what I was particularly interested in was the number of pedestrians killed by lorries – 15% and if you include vans then a quarter of them are commercial vehicles. The haulage associations are lobbying government, both the UK and the EU to improve the sight lines of vehicles, because a lot of our members are paying thousands of pounds to retrofit our vehicles.

A year ago Sainsburys started putting cameras on both sides so as not to distract the driver. So if the driver indicates to go left, the camera automatically comes on his dash for the left hand side and if he wants to turn right, it comes on for the right hand side.

There is a really good diagram on the internet[22], they brought school kids in England and marked the area along a lorry where there are blind spots and they had 25 bikes around a lorry to show them".

"They (the elderly) are a very vulnerable road user group. There are all sorts of issues affecting the elderly, there is senile dementia, early stages etc so it is very difficult to pin that down. From an HGV perspective, it can't be that they can't see them, unless they are concentrating on something else".

[22] http://www.youtube.com/watch?v=FSUMQRl-JSo

"You might find some of the lorry cases they have side mirrors and there are mirrors on the right hand side and mirrors on the left hand side. However the driver cannot physically see everything, he checks to see if everything's alright on one side and checks the other, but by the time he's moved back from checking and makes the decision, the driver that is, that there is nobody here. But the driver cannot physically look in all directions".

5. Children

"I suppose it's the height of the child, if you are looking, you are looking for an adult. You don't think to look a bit lower".

"But it is also the spontaneity of the child as well, if a child goes in that second or two and it's crossed the road and whoever's looking after the child – whether it's a neighbour or a child minder, it sadly happens".

"It is within the sustainable transport programme for government targets to try to influence people to use more sustainable transport which includes more walking, more bicycles. But all road users need to take responsibility for their own safety and the safety of others".

"There are reflective strips for clothes and trainers. It would be a good idea for children's coats. I think M&S have them now for winter coats, it should be a standard."

"I just wouldn't let my children go on the road – end of. If they are picked up then they wouldn't be on the road".

"We get a lot of political pressure for example questions from MLAs wanting that when school buses stop, all traffic stops. But this could be seen as mollycoddling children who see that when they get off a bus, the traffic would have stopped, whereas with a normal service bus this would not happen".

"How many times has a child been killed crossing a road after being dropped off? I would say as rare as hen's teeth. But that's the emphasis of the politicians, to change something that has already changed and not changing things that need to be changed and are not being changed".

It is an educational thing because we are human beings and no matter what type of road user we are, we are human beings with a decision making process that kicks in and within that there is freedom of choice. To play the devil's advocate, looking at the statistics, there are very few children pedestrians killed and one of the reasons for that is because they are taken everywhere by car. But when they become adult road users themselves, where is their learnt road user behaviour? How do they learn to look after themselves when they are out on the road, because they have never had to do it. So there is a whole educational cycle in there".

6. The Elderly

"It is not surprising that if you are elderly it is more likely to be a fatality if you are involved in a traffic collision".

"I don't know if any of you have been to Dublin, but they have the "Woodpecker" at every pedestrian crossing and it is the sound. So for any elderly person that doesn't recognise the lights or cannot differentiate or is even colour blind, they rely on that sound. So it's not just visual – in Dublin, but also sound that is used to get people across the road".

"..we are aware of that and other similar types of systems. We are actively considering installing pedestrian countdown systems to tell you how long you have to cross or wait to cross. Probably not that because we are changing our crossings from pelican to puffin and I have been subjected to a campaign of people wanting to extend the time of the crossing to reflect the slower pedestrian speeds like the elderly. I think we've answered that by installing puffin

crossings that detect with a radar if somebody is still on the crossing so that they will extend the red light for vehicles".

"I think you have to be realistic as to what NI resources would be and the likelihood that they could stop all this behaviour. Ultimately you can put measures in place that help protect people but the end result is that it is down to the individual road user to change their behaviour to save their lives and the lives of other road users through education and allow them freedom of choice.

7. Intoxicated pedestrians

"If you look at what happened in the Republic of Ireland, when they reduced the drink drive limits to 50 mg per 100 ml, the publicans were up in arms because the people who were drinking in their pubs were drinking and driving home and that was going to do them out of business. So their primary thing is to protect their business because they are there to make a livelihood, it's their business. It's up to an individual to make sure that they have a way of getting home safely".

"I think that most people here, drinking with people in a bar and someone is drinking over the limit, you are just glad you are not driving and you don't think that they might be walking home and that they would put themselves in danger".

"A lot of pubs now have free phones for taxi cabs and there are taxi ranks outside. So they probably feel that they are doing something useful".

"Also I think our drinking habits have changed - there is a lot more home drinking. I think the term is called "pre-loading" so that's what happened at the Odyssey wasn't it? There was a bus load of teenagers who arrived absolutely plastered".

"There are campaigns out there designed to protect the pedestrian who is intoxicated but it is very difficult to try and influence a pedestrian who is intoxicated so the methods that we use is to try and educate the drivers who are in control of the vehicles and are likely to kill the drunk pedestrian in the first place. So the problem is you can't tell somebody who has had a skin full what the sensible thing to do is".

"The fact that they are intoxicated and some of them quite heavily intoxicated means that they don't have enough sense to keep themselves safe, so for them the best route from the research that we have carried out is to educate the other road users, the drivers to try and protect them".

Summary

"The difference between summer time and winter time and the daylight hours, the location of the environment, whether it's rural or urban, different speeds, weather conditions – all those things. As a human being we need to be frequently reminded about that and challenged about that and how that is embedded through education campaigns and advertisement campaigns, licencing campaigns, who should be trained and who should be out on the roads. That's about the facts of life. We (FSNI) see very first hand the effects of loved ones and others. I think it is unrealistic to get them down to zero, it's an unrealistic drive, but there should be a drive to reduce casualties".

(...) "Maybe something that could be incorporated into the HGV test for drivers about vulnerable road users, I don't believe that it is part of the syllabus, so something to do with pedestrian crossings, maybe using something like London as a benchmark for Northern Ireland as well such as a safer lorry scheme, where companies are actually rewarded. For example if you come into London and if you have a lorry that ticks all the safety issue boxes, you get a reduced fee because you have safer vehicles. (...) it's really just raising public awareness just where the lorry driver cannot see them".

"How often do we test the vehicle? It is from four years of age and the vehicle that has a defect would have killed around 1%. But all the other road users which are 99%, we never assess them until they kill someone".

"I have to say that a lot of road traffic interventions and a lot of the things that you suggest are very expensive and would come at a significant cost to the tax payer and you can't introduce all of that red tape to address every single issue and even if you did all of that, you are talking about tiny percentages to make a difference. The large majority of road traffic collisions research tells you – over 95% is down to human error".

"But that's the point I am trying to make, there is no assessment on humans on a regular basis, as regards assessment, as regards updating their training to be aware of all these things. If we went out and did a survey now on the streets of Belfast, how many people could assess the stopping distance of a vehicle in the dark? What would they tell you?

Those people on the road should be able to do that, because they are given a licence to do that, but they don't. What training of awareness are pedestrians given? There is this fixation on the driver, but what attention is given to the other road users. What education is given to the cyclist and the pedestrian – if he or she can't see them?"

Initial driver training for night time driving... "is part of the package and currently I've almost got completed an education pack for ADIs – that's driving instructors about educating pupils as they are taught to drive about road safety issues - about speed, about vulnerable road users. Not massive big information packs, but nice little reminders to those students that when they are at that early learning stage, they need to feel the risk of being a road user, they need to feel in control of a car right from that stage onwards. It is based on a lot of the education material that we have out there and from the road safety advertising, so there is a lot and the messages are consistent. The messages are drawn from real people stories, they are not actors".

.."there is a huge responsibility on every road user, the reason that the majority of our advertisements target the driver is because that's how you get the biggest payback in road safety terms, so that they are focused on what they are doing and their behaviour and then the collisions that they are involved in should reduce. So that gives you the biggest payback in road safety terms. There are other issues out there. Every road user needs to improve their own behaviour and share responsibility and that is what share the road to zero is all about. It is about everybody taking responsibility".

.."This report will be useful for my road safety education officers so that they know the issues in and around pedestrian safety and particularly when they are targeting the elderly and preparing presentations and so forth and it will allow them to use some of that information to target what they want to do. With regards to campaign advertising this document would be one of the research documents I would use but it would not be used in isolation."

"I think that a message to the elderly would be something helpful, because they are so vulnerable and your statistics are interesting because it shows what a high proportion they are and so some sort of advertising campaign. I saw that for young people, how they are going to get home and how to organise themselves. You know, staggering on a dark country road late at night. They seem to be the two main areas. Children, luckily are not that many, certainly not young children".

12. Conclusions

The consensus of the Focus Group was that there are three main areas of concern in relation to pedestrian fatalities: visibility, the elderly and intoxicated pedestrians. Cognitive impairment underpins these three groups:

- The visibility of drivers can be impaired due to darkness and glare, this is compounded due to the dark clothing of pedestrians which inhibits the drivers to discern them in darkness.
- The elderly are vulnerable road users because of their frailty and at times inability to understand speed and distance.
- Intoxicated pedestrians are a danger to themselves because of the levels of alcohol ingested which cause these pedestrians to be unstable and incoherent.

However the group participants recognised and agreed that all road users have shared responsibilities in their behaviour while using public roads.

Finally, the FSNI Road Traffic Collision Investigation Unit is summoned regularly to attend Coroners' Inquests and Court proceedings to provide information regarding the dynamics of pedestrian fatalities in Northern Ireland. The outcome of these inquests and court proceedings in many cases are reliant on the testimony of the FSNI investigators. Thus the wealth of information that these investigators can provide would be of benefit to road safety stakeholders who are responsible for legislation, training, research and awareness campaigns in order to increase the knowledge and skills of these operators.

13. Recommendations

The group participants acknowledged that the three areas of concern: visibility, elderly pedestrians and intoxicated pedestrians need closer attention.

Representative organisations of drivers, trainers, vehicle manufacturers, commercial vehicles, pedestrians and the drinks industry should consider ways of providing information to their customers, clients or members to assist in reducing road casualties.

There also needs to be focus on the initial training of drivers in order to raise awareness to look more carefully for vulnerable pedestrians and recognise that the conditions on the road change constantly.

Technological improvements including cameras and sensors would benefit problems of blind spots for lorries and the haulage industry should continue to lobby the UK and EU governments to change the physical structure of lorries to lower and extend the front of the cab, allowing the drivers to have a wider scope of vision.

Closer collaboration between road safety stakeholders would facilitate the exchange of information.

14. References

1) Department of Health, Social Services and Public Safety, Northern Ireland: Adult Drinking Patterns Survey in Northern Ireland 2011. http://www.northernireland.gov.uk/news-dhssps-180112-adult-drinking-patterns

2) Dunbar G, Holland CA and Maylor EA (2004): Older Pedestrians: A critical Review of the Literature. Road Safety Research Report No. 37, Department for Transport, London http://webarchive.nationalarchives.gov.uk/+/http:/www.dft.gov.uk/pgr/roadsafety/research/rsrr/theme1/olderpedestriansacriticalrev.pdf

3) Eubanks JJ (1994): Pedestrian Accident Reconstruction. Lawyers and Judges Publishing Inc. Chapter 2 p.39

4) Evans AK and Smith R: Vehicle Speed Calculations from Pedestrian Throw Distance. Proc. Inst. Mech. Engrs. 1999, Volume 213; Part D.

5) Heinonen JA and Eck JE (2007): Pedestrian Injuries and Fatalities, Guide No.51 Center for Problem Oriented Policing, University of Albany, New York. http://www.popcenter.org/problems/pedestrian_injuries/

6) Hutchinson TP, Kloeden CN, Lindsay VL (2009) Accidents to intoxicated pedestrians in South Australia; Centre for Automotive Safety Research, CASR Report Series CASR061, The University of Adelaide.

7) Highway Code Northern Ireland http://www.nidirect.gov.uk/highway-code-english-may-2014.pdf?rev=0

8) Green M et al (2008): Forensic Vision with Application to Highway Safety; Lawyers and Judges Publishing Company inc. 3rd Edition http://www.visualexpert.com/Resources/pedestrian.html

9) Langham M.P, Moberly N.J (2003): Ergonomics Vol. 46, No 4, pages 345 – 363. ISSN 0014-0139 print/ISSN 1366-5847 online # 2003 Taylor & Francis Ltd

10) Martin A: Factors influencing pedestrian safety: a literature review by A Martin (TRL Limited); PUBLISHED PROJECT REPORT PPR241 https://www.tfl.gov.uk/cdn/static/cms/documents/factors-influencing-pedestrian-safety-literature-review.pdf :

11) National Highway Traffic Safety Association (2013): http://www.nhtsa.gov/Pedestrians and http://www.usatoday.com/story/news/nation/2013/08/05/drunk-pedestrian-fatalities/2621673/

12) Owen R and Fosdick T. Stepping out, Pedestrian Casualties: an analysis of the people and circumstances. Road Safety Analysis, Banbury. Commissioned by PACTS – the Parliamentary Advisory Council for Transport Safety: http://www.pacts.org.uk/wp-content/uploads/sites/10/docs/pdf-bank/Stepping%20Out%20-%20smaller%20file%20size.pdf

13) Oxley J, Charlton J and Fildes B (2005): The Effect of Cognitive Impairment on Older Pedestrian Behaviour and Crash Risk. Monash University Accident Research Centre, Report No. 244 http://www.monash.edu.au/miri/research/reports/muarc244.pdf

14) Pedestrian Council of Australia, Road Safety Campaign: http://www.walk.com.au/pedestriancouncil/page.asp

Annex one:
Summary of n.55 Pedestrian Fatalities in Northern Ireland between 2008 and 2012

Age	Time	Visibility	Season	Clothing	reflective	Position	Impact	Contributory factors
70 and over	17.20	darkness	autumn	dark	no	upright	nearside	Glare from oncoming lights
	17.20	darkness	winter			upright	offside	Pedestrian walked in front of car
	11.25	daylight	summer			upright	rear	Reversed into Pedestrian
	14.10	daylight	spring			upright	rear nearside	Reversed into Pedestrian
	19.25	darkness	winter	dark	no	upright	nearside	Driving carelessly in an urban area
	7.50	daylight	summer			upright	nearside	Glare from sun
	18.45	darkness	winter	dark	no	upright	nearside	Pedestrian on road
	16.20	daylight	spring	dark		upright	nearside	Glare from sun
	9.45	daylight	summer			upright	nearside	Pedestrian crossed on red light and in blind spot
	15.40	daylight	winter			upright	offside	Pedestrian walked in front of lorry
	11.00	daylight	autumn			upright	nearside	Pedestrian walked in front of bus
	12.30	daylight	spring			upright	offside	Lights were green for lorry
	16.50	darkness	winter		no	upright	nearside	Pedestrian crossed on red light and in blind spot
	17.55	darkness	autumn	dark	no	upright	n.a.	Glare from oncoming lights
	20.30	darkness	winter	dark	no	upright	nearside	Fog
	22.00	darkness	autumn	dark	no	upright	nearside	Glare from oncoming lights
	7.20	darkness	winter	dark	no	upright	nearside	Unable to stop in time
50 to 65	10.20	daylight	spring	light	no	upright	offside	Unable to stop in time
	6.45	darkness	winter	dark	no	upright	nearside	glare from oncoming lights
	12.40	daylight	winter			upright	nearside	Driver didn't notice the pedestrian crossing
	18.05	darkness	autumn	dark	no	upright	nearside	Pedestrian on road. Hit and run
	21.00	darkness	spring		no	prone	nearside	Glare from oncoming lights
	18.30	darkness	autumn	dark	no	upright	nearside	Pedestrian on road
	20.10	darkness	autumn	dark	no	upright	nearside	Pedestrian on road
	17.15	darkness	winter	dark	no	upright	nearside	glare from oncoming lights
	20.00	darkness	spring	dark	no	sitting	nearside	Glare from oncoming lights
	21.00	darkness	spring	dark	no	upright	nearside	Pedestrian standing in the middle of the road
	18.45	darkness	autumn	dark	no	upright	offside	Pedestrian on road
	14.40	daylight	spring			upright	offside	Blind spot
40 to 50	9.10	daylight	summer			upright	offside	Pedestrian walked in front of car
	22.15	darkness	spring	light	no	upright	nearside	Pedestrian standing in the middle of the road
	4.25	darkness	summer	dark	no	prone	front	glare from oncoming lights
	21.40	darkness	spring	dark	no	upright	nearside	Pedestrian on road
30 to 39	23.15	darkness	autumn	dark	no	upright	offside	Pedestrian on road
	10.30	darkness	summer			upright		Pedestrian on road
	22.55	darkness	winter	dark	no	prone	nearside	Driver distracted from oncoming lights
	10.10	daylight	autumn			upright	nearside	Driver lost consciousness due to heart attack
	1.50	darkness	spring	dark	no	upright	nearside	Driver intoxicated and lost control

Summary of n.55 Pedestrian Fatalities in Northern Ireland between 2008 and 2012 (cont.)

17 to 26	7.45	daylight	summer			upright	nearside	Pedestrian walked in front of lorry
	2.20	darkness	autumn	light	no	upright	nearside	Pedestrian on road. Hit and run
	19.05	daylight	spring			upright	nearside	Driving dangerously in an urban area
	7.50	darkness	winter	dark	no	upright	offside	Glare from oncoming lights
	22.10	darkness	spring	dark	no	upright	offside	Glare from oncoming lights
	3.50	darkness	spring	dark	no	upright	nearside	Pedestrian on road
	3.20	darkness	summer	dark	no	upright	offside	Pedestrian on road
	1.20	darkness	summer	dark	no	upright	nearside	Glare from oncoming lights
	16.10	darkness	winter	dark	yes	upright	nearside	Pedestrian walked in front of car
	1.10	darkness	autumn	dark	no	upright	nearside	Pedestrian on road
2 to 16	17.30	darkness	winter	dark	no	upright	offside	Pedestrian's vision blocked by umbrella
	23.00	darkness	spring	dark	no	upright	nearside	Pedestrian on road
	7.50	daylight	summer			upright	offside	Vision of pedestrian obscured by another car
	15.25	daylight	winter			prone	nearside	Blind spot
	18.45	daylight	spring			upright	offside	Child out of view
	17.30	daylight	spring			upright	rear	Reversed into child
	17.15	daylight	summer			upright	offside	Child ran out in front of car