

# RURAL ROAD SAFETY OF CHILDREN AND YOUNG PEOPLE IN NORTHERN IRELAND

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## 1. THE COMMISSION

Colin Buchanan was commissioned by the Department of the Environment's Road Safety Division to:

- undertake a literature review of road safety for children and young people in rural areas and review current and planned interventions in rural areas
- undertake a 10 year analysis of collision and casualty data for children (aged 0-15) and young people (aged 16-24) in rural areas to identify influencing factors and any common trends, patterns and characteristics of rural casualties and collisions
- investigate the travel patterns, behaviour and attitudes of children and young people on road safety in rural areas
- recommend specific action measures aimed at reducing collisions and casualties involving children and young people in rural areas in Northern Ireland

The study was based on demographic data for each of the 890 Census Super Output Areas (SOAs) and road collision data for the period 2000-2009 supplied by the Police Service of Northern Ireland (PSNI).

The road collision data comprised records for 63,340 collisions involving 102,997 casualties of which 38,440 were under 25 years old.

In addition to the ten year dataset, a three year dataset was provided by the PSNI for the period April 2007 - March 2010 (inclusive). Postcode information relating to casualties has been recorded by the PSNI since April 2007. This allowed an analysis to take place of how the location of collision and location of residence of the casualty are distributed.

Readers are advised that a full report of the research is published at:

[http://www.doeni.gov.uk/roadsafety/18938\\_cyp\\_rural\\_road\\_safety\\_final\\_report\\_v01.pdf](http://www.doeni.gov.uk/roadsafety/18938_cyp_rural_road_safety_final_report_v01.pdf)

## 2. LITERATURE REVIEW

Key points of relevance to the study were identified in three key areas. These included:

- Behaviours and attitudes to road safety:
- many attitudes and behaviours associated with risky drivers are present at ages much younger than 17 (Waylen and McKenna (2002))

- account needs to be taken of the individual differences in characteristics such as sensation-seeking, anti-social behaviour and competitiveness (Waylen and McKenna (2002))
- speed is a major contributory factor in collisions involving young people on rural roads (DOE(2010a))
- young male drivers are more confident than young female drivers (Scottish Executive Social Research (2005)) and male and younger drivers show more enjoyment and riskier behaviours particularly on unfamiliar rural roads. Their perceptions of risk are minimised by their confidence (Collins *et al*(2008))
- the presence of passengers such as family members moderates risk but for young male drivers the presence of friends of a similar age encourages riskier behaviours (Collins *et al*(2008))
- in Ireland, young male drivers are disproportionately at risk of being killed when drinking and driving (Bedford *et al*(undated))
- Drivers in rural areas are less likely than urban drivers to wear seatbelts and are more likely to drive under the influence of alcohol (Rakauskas *et al*(2007))
- Exposure to risk on rural roads
  - young children are especially at risk on rural roads where the severity ratio is 50% higher than on urban roads (TRL (2004))
  - Child cyclists using rural routes are more at risk from being involved in a serious collision than those in urban areas (DfT (2010))
  - Children in rural areas may be more exposed to accident risk as car passengers because of the greater car ownership, longer trip lengths and higher levels of travel to school by car (Christie *et al*(2002))
- Interventions
  - Engineering measures tried and tested in rural areas include speed reducing techniques such as traffic calming, improvements to verges and bend treatments
  - Publicity techniques to attract the attention of young drivers have also been tried and tested and have indicated that young people need to be able to relate to what they are seeing in order for it to be effective
  - Research has shown that young people are receptive to better training particularly when driving on rural roads. However, they are averse to any restrictions to limit or restrict their freedom (Collins *et al* (2008)). McKenna (2010) highlighted the need for supporting evidence when advocating road safety education interventions to ensure their effectiveness
  - Acknowledging that road safety is a life-skill and supporting and encouraging parents and teachers to pass on road safety messages to children from a young age will help to ensure that as they grow-up they are made aware of the risks they face in the present and in the future.

### 3. DATA SOURCES

Road collision casualty data were provided by the PSNI. The data covered the period January 2000 to March 2010 (inclusive).

The population data used were those relating the 2001 Northern Ireland Census. The data were downloaded from the Northern Ireland Statistics and Research Agency (NISRA) website.

Deprivation data relating to the Multiple Deprivation Measure (MDM) for 2005 were downloaded from the NISRA website.

#### 4. TEN YEAR QUANTITATIVE ANALYSIS

##### 4.1 Overview

Table 1 shows the number of casualties by severity. It is evident that the proportions of killed and seriously injured (KSI) casualties are higher in rural areas than in urban areas for all age groups. For ages 16 and above the KSI percentages for rural areas are almost double the equivalents for urban areas.

**Table 1: Casualty Severities by Age Group (2000-2009)**

Age group	Rural casualties			Urban casualties		
	KSI <sup>1</sup>	Total	% KSI	KSI	Total	% KSI
00-15	600	4,284	14%	978	7,649	13%
16-19	1,128	5,333	21%	820	6,912	12%
20-24	1,207	5,968	20%	917	8,294	11%
25 and over	4,675	24,828	19%	3,691	39,729	9%
All	7,610	40,413	19%	6,406	62,584	10%

<sup>1</sup> Killed and Seriously Injured

Casualty rates by road type are presented in Table 2. It is seen that rates for rural roads are higher than those for urban roads with rural deaths occurring at four times the rate for urban deaths. The highest rates are observed on rural non built-up roads.

**Table 2: Casualty Rates<sup>1</sup> by Road Type (2000-2009)**

Location type		Killed	Seriously injured	Slightly injured
Motorway		0.0	0.1	1.5
Rural <sup>2</sup>	Built-up <sup>3</sup>	0.1	1.4	10.2
	Non built-up	1.5	10.5	47.9
	All	1.6	11.9	58.2
Urban	Built-up	0.2	4.1	42.3
	Non built-up	0.1	1.2	7.8
	All	0.4	5.3	50.1

<sup>1</sup> Rates are in casualties per 1,000 population per decade.

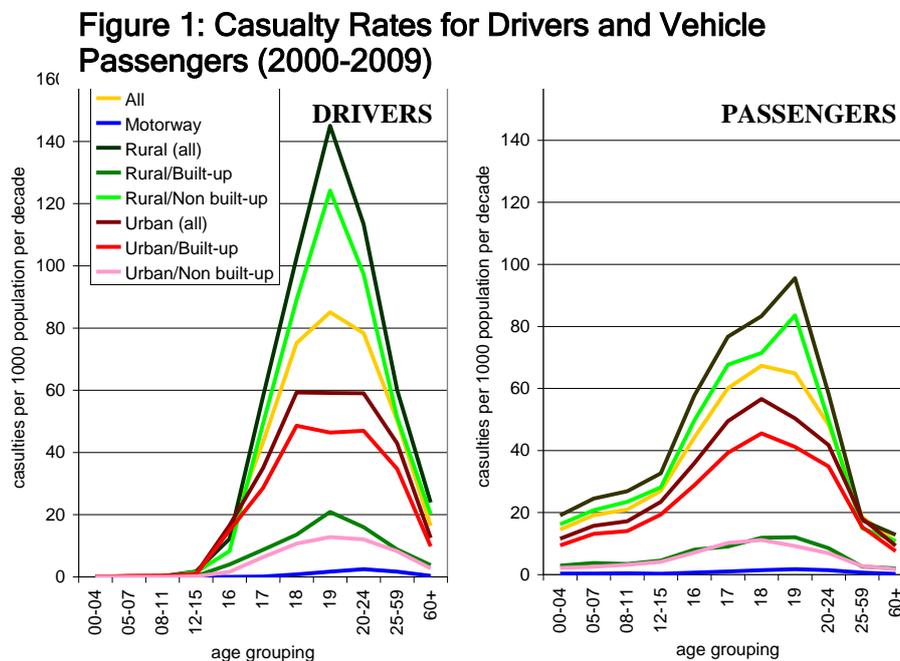
<sup>2</sup> The Urban/Rural definition is applied at the SOA level. Rural communities have less than 4,000 population and urban communities have more.

<sup>3</sup> Built-up roads have speed limits of 40mph or less. Non built-up roads have speed limits in excess of 40mph.

In more detailed analysis, the key findings were found to be related to car drivers (aged 17-24) and to vehicle passengers of all ages (0-24). Drink/driving and non compliance with seatbelt legislation were also found to be age related.

## 4.2 Casualty Rates for Drivers and Vehicle Passengers

Casualty rates for both drivers and passengers peak at the age of 19 with the highest rates experienced on rural non built-up roads (see Figure 1). Corrections were made to the exposure data for young drivers to control for the age at which licences are issued (at age 17 the proportion of drivers in the population for that age is 21%, the equivalent proportion for age 19 is 41%). Using the corrected data it was found that in rural areas 19 year old drivers still have the highest casualty rates but in urban areas driver casualty rates peak at 18 and on Motorways rates peak amongst 20-24 year olds.



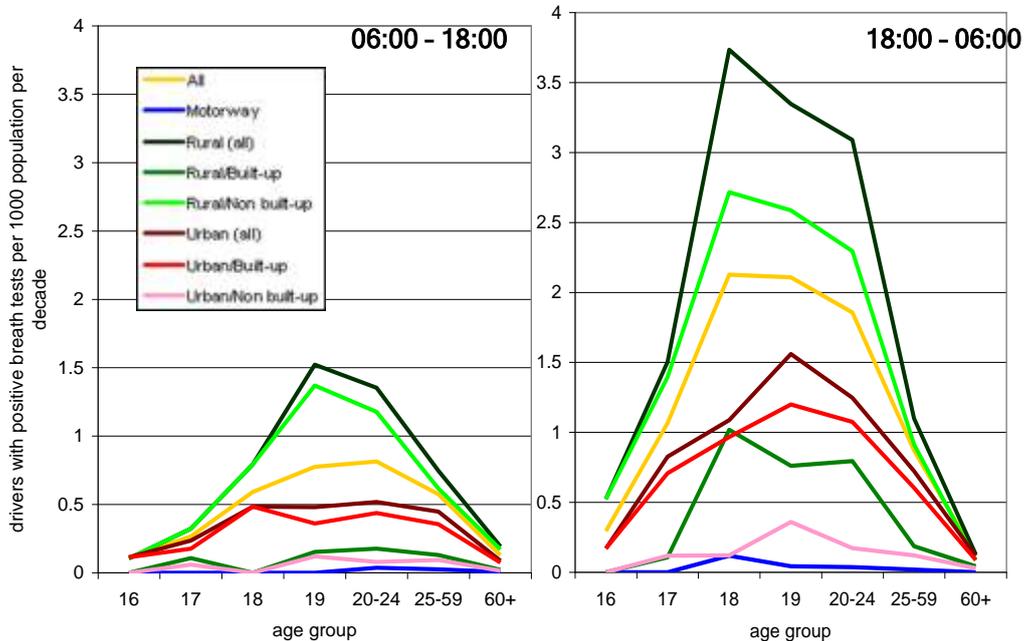
## 4.3 Drink Driving

Casualty rates for young adults were found to be highest during the evening and overnight. These increased casualty rates may relate to an increased tendency to drive under the influence of alcohol. Figure 2 shows the number of positive breath tests per 1000 population per decade. With the exception of 16 year olds and over 60s all age groups show statistically significant increases in drink driving rates during the evenings compared with the daytime.

In addition, rural 16, 19 and 20-24 year olds have significantly or highly significantly increased rates of daytime drink driving as compared with 25-59 year olds. In the evening, 17, 18 and 19 year olds show this pattern. In the daytime in urban areas only 16 year old drivers have significantly increased rates of drink driving as compared with 25-59 year olds but in the evening this pattern appears for 16, 19 and 20-24 year olds. It appears that older young adults in particular are more likely to drink and drive than adults generally.

Rural daytime drink driving rates are significantly increased over urban daytime drink driving rates in over 19s and evening rates are significantly increased for 18-59 year olds.

**Figure 2: Positive Breath Test Rates for Drivers (2000-2009) by Time of Day**



#### 4.4 Seatbelt use

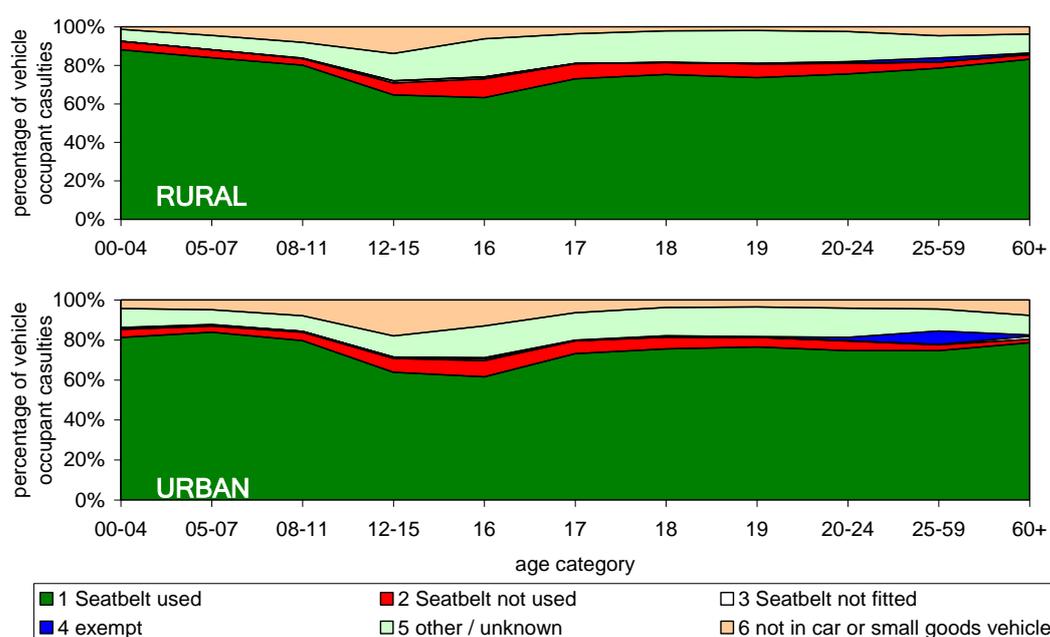
Seatbelt use rates (Figure 3) are hard to determine accurately as few people admit that they were not wearing one at the time of a collision.

Amongst vehicle driver and passenger casualties, the reported proportions of cases where seatbelts were fitted but not used do not differ significantly between rural and urban areas except amongst 19 year olds where they are significantly higher in rural areas. The proportion of cases where seatbelts were not fitted is significantly lower in rural areas for 0-4 and 20-59 year olds and those over 60.

For passengers, the proportion of rural children and young adult casualties aged 12-24 who were not wearing a seatbelt though one was fitted is significantly higher than the equivalent proportion of 25-59 year olds. The proportion of 12-16 year old casualties arising from situations where seatbelts were not fitted is also significantly higher than the equivalent proportion of 25-59 year olds. This suggests that these age groups are more likely to be exposed to situations where seatbelts are unavailable and more likely to fail to wear them where they are available.

For younger passengers in cars there was evidence that children up to the age of 11 tended to wear seatbelts and were seated in the rear of the car but that as children move on to secondary school, seatbelt wearing becomes less prevalent and there is more travel in the front seat. For bus passengers the significant majority are injured when seated but the numbers and proportions of standing passengers injured rises for children in the 12-15 year old age group.

**Figure 3: Seatbelt Use (2000-2009)**



## 5. FOCUS GROUP QUALITATIVE ANALYSIS

The findings of the quantitative collision data review (summarised above) helped design the qualitative research in terms of group structure and topics discussed. In total there were eight focus groups, one rural and one urban for each of the four age groups 8-11, 12-15, 16-19 and 20-24. The purpose of the groups was to probe more deeply into the underlying travel patterns, behaviours and attitudes as pedestrians, cyclists, drivers and passengers.

This aspect of the study was particularly productive. The salient findings related to how behaviour tended to become less safe and markedly more risky as children grew into young adults. The 8-11 year olds tended to be well behaved - using seat belts and sitting in the rear seat - and critical of others not practicing good behaviour. For 12-15 year olds behaviour has begun to slip with some clear signs of poor decision making including for example not wearing cycle helmets because they were seen to be “uncool”.

The 16-19 year olds were clearly more prone to risk taking particularly when driving or as a passenger in a car driven by a friend of the same age. Although these young adults indicated that whilst they tried to be responsible drivers they did sometimes succumb to dangerous practices and the facilitator was regaled with tales of actions including:

- “messing” with the driver’s seat
- passengers pull hand brake when they are driving
- passengers put on indicators, lights, wipers, etc when they are driving
- have the music up loud
- don’t wear a seatbelt
- using mobile phone and texting

- eating whilst driving
- drinking and driving
- speeding when in a rush
- overloading car
- watching portable TV/DVD

For 20-24 year olds behaviour was beginning to improve again (particularly urban dwellers) although some of the respondents did indicate that a number of the above bad practices were still present. Their lives, however, tended to revolve around a wider social life driving and this tended to mean a more responsible attitude to driving was more prevalent.

In summary the key findings from the focus groups were:

- Children and young people have a good understanding of risk factors associated with walking, cycling, car driving and being a vehicle passenger.
- In the younger age groups (8-15) there was a difference between the sexes with boys aspiring to drive fast cars and motorbikes with girls generally exhibiting a more cautious approach to road safety issues.
- Young children in the 8-11 year old focus groups had a very good grasp of what constitutes good safety behaviour and can be actively involved in promoting their own safety by choosing, for example, to wear seatbelts, to be seated when travelling in a bus etc.
- In spite of a good understanding of risk, young adults (age 16-24) indicate that there is a tendency to forget about or not to adhere to safe behaviour as drivers and passengers. Young adults in the 16-19 age group reported that on passing the driving test they forgot about the rules of the road.
- The road safety advertisements shown on television are considered to be too “sad” or “gruesome” and are often switched off by 8-19 year olds. Young adults did not believe they were very effective in influencing behaviour (some respondents admitted to forgetting about them).
- Bus overcrowding is seen as a problem as it forces passengers to stand. It was reported that some 12-15 year old passengers elected to stand even if seats were available.
- Car overloading was also cited as being risky behaviour by the three older age groups.

## **5. KEY FINDINGS OF THE STUDY**

### **5.1 Overview**

The salient finding of this research relates to the high casualty rates for young drivers and passengers particularly in the 16-19 year old age group.

There was also evidence from the casualty analysis that child passengers (aged 0-15) in rural areas are over-represented but to a significantly lesser degree than young adults.

## Young drivers

Clearly, these are young and relatively inexperienced drivers but there is some evidence from the collision data that there are additional problems regarding attitudes and behaviour which are having an impact on the rates. Most prevalent of these include:

- the fact that young adults involved in collisions are more likely to have been drink-driving than older adults
- collisions involving young adults are more likely to occur late evening/early morning on Fridays, Saturdays and Sundays
- the causation factors assigned by the reporting police officer include
  - excessive speed having regard to conditions
  - inattention or attention diverted
  - alcohol or drugs

These more quantitative findings were probed in more qualitative depth during the focus group discussions and there was strong confirmatory evidence that the behaviour of some young drivers in rural areas is not to an acceptable standard. Feedback from the groups clearly indicates-at least for some young people-that there is a culture of risk taking when driving including drink and drug driving, using mobile phones and non use of seatbelts.

There is no evidence from the focus groups of a lack of education across all age groups. Younger children in the 8-11 and 12-15 year old age groups were all able to identify what they considered to be risky behaviour as a pedestrian and as a driver and seemed well aware of what they should and should not do. This education seems, however, to have little impact on the decisions made by some young adults particularly males when they drive. Indeed younger adults in the 16-19 and 20-24 year old age groups tend to understand the problems but fail to appreciate the real and heightened level of risk that they are taking when driving particularly when speeding, being drunk and with peer group passengers on a night out.

Urban drivers did not tend to self-report such a wide range of bad behaviour as their rural counterparts. In the 16-19 and 20-24 age groups, drinking and driving was not self-reported and this may be the result of more active enforcement in urban areas and the provision of more frequent and better public transport services.

This attitude to risk taking is not simply a road safety issue, it is one that is prevalent throughout the UK and beyond. This is a wider aspect of social research which is beyond the scope of this study but it is one which impacts heavily on road safety issues. Sorhaindo (2007) summarises the wider problem:

*...young people in the UK are disproportionately engaging in behaviours that risk their health and wellbeing when compared to young people in other OECD countries. The prevalence of UK youth risking their health through smoking, drug and alcohol use, unsafe sexual activity and becoming parents in their teenage years, when taken together, far surpasses that of any other country in the OECD.*

In summary, the higher casualty rates for young drivers is part of a wider social problem relating to higher levels of risk taking behaviour in young people than in older people. This does not mean, though, that the solution to this problem lies solely in the context of wider social education and behaviour change. It is also relevant to note that rural casualty rates tend to be higher for young people resident in less deprived areas and this is probably the result of higher car ownership in these areas offering more opportunities for driving.

In terms of risk of a collision, there has been a body of research into the issue of whether it is driver age or experience that is the major factor influencing risk. There are some differing opinions but the general consensus is that both age and experience are related to risk. There is evidence to suggest that the older the driver is in becoming licensed to drive, the lower is the initial risk (Vlakveld (2004)).

The conclusion is that both youth and inexperience strongly influence accident risk and that there are overall road safety benefits in terms of reducing casualty rates and casualty numbers by raising the age at which a young person can legally drive.

In the rural areas of Northern Ireland there is clearly a demand for young people to drive to places of entertainment and to be with friends. This demand will be heightened in deep rural areas where there is little or no public transport available. The evidence is that on nights out - particularly over the weekend-there is a culture where for a significant minority of young people, drinking and driving is prevalent and more so than in urban areas. "Larking about" when driving was also highlighted as a part of that culture.

Put bluntly, the young age at which young people pass their driving test and the culture where a night out involves driving and "larking about" is clearly a cause of many of the collisions in rural areas in Northern Ireland.

### **Young adult passengers (age 16-24)**

The evidence from the collision analysis indicates that young adult passengers experience high casualty rates in collisions on rural roads. These are higher than the rural rates for older adults and for urban rates for young adults. The focus group findings indicate that passengers far from being passively involved in risky behaviour can play an active role in risk taking by the driver. Playing games where the driver uses the pedals and a passenger turns the wheel was reported in the rural focus group for 20 - 24 year olds. There was also no evidence in any young adult focus group that passengers sought to prevent their friends from driving when drunk.

### **Child passengers (age 0-15)**

In terms of car passengers, responses in the focus groups for the for 8-11 and 12-15 year old children indicated a very high seatbelt wearing rate with almost all children stating they wore seatbelts when travelling in a car. Children in the rural focus group for 8-11 year olds also indicated that they all sat in the back of the car but the children in the 12-15 year old focus groups reported that they liked to sit in the front of the car and often did. The evidence, therefore, from both the collision data analysis and the focus groups is that parents and children seem to follow the advice about young children wearing seatbelts and travelling in the back seat. These good habits though show some signs of

degradation in the 12-15 year old age group - indeed some of the older children in this age group may be passengers in cars driven by young drivers who are less likely than older drivers and parents to insist on seatbelt wearing.

For bus passengers, both rural and urban children in the 8-11 year old focus groups made some strong points about their experience on buses including:

- They are crowded with people standing
- They are too small
- They are not fitted with seat belts
- If seatbelts are fitted they sometimes did not work

Children in the 12-15 year old focus groups also reported bus overcrowding and malfunctioning seat belts (when fitted) but indicated a strong reluctance to use them (e.g. difficult to turn round and speak to friends). This is evidenced in the collision analysis where the rates increase significantly in the 12-15 year old age group. Although the incidence of injuries to standing passengers is generally low in rural areas for young children it is perceived by them to be a problem.

These findings do suggest that the younger children up to the age of 11 are often forced to stand but if seated are keen to wear seat belts and would do so if available, however, not all buses they travel on have seatbelts fitted. Standing and travelling on a bus without wearing a seatbelt does increase the risk of injury in a collision or an incident involving sudden braking. Such instances on rural roads are likely to involve greater speeds and higher risks of injury. From the age of 12 and over children are aware of the issues but seem less predisposed than younger children to take precautions as bus passengers and as a consequence are injured in greater numbers.

## **5.2 Implications for road safety planning**

The research has clearly shown that young drivers - particularly in the 17-19 year old age group - are significantly over-represented as casualties and that this is particularly the case on rural non built-up roads and issues relating to drink-driving and drug-driving are very much in evidence. It is also the case that the severity of injury in the collisions on rural roads is significantly higher than it is on urban roads.

Clearly there is a lot that is already being done in Northern Ireland to tackle this problem including:

- Learning to Drive (L2D)
- PSNI youth conferencing
- Restricted licensing
- Consultation on Graduated Driver Licensing (GDL)
- YFCU (Rural Road Safety Campaign)

There is no doubt that measures such as these are important in educating drivers and also in seeking to encourage better attitudes to driving in younger people which in turn should lead to better behaviour and fewer collisions. There is also no doubt that these interventions form a key part of road safety activities and they need to be continued subject to review, audit and possible adjustment. However, they do not have the ability to generate a step change

in driving behaviour. More radical measures would be required and these may include:

- Raising the driving age
- Limitations on night time driving and the carrying of passengers could be introduced either on the basis of age or on length of driving experience
- Hit hard on young drivers responsible for certain types of collisions either through more focussed penalties from loss of licence to a suspended loss of licence subject to an offence-free period
- Introduce the use of GPS technology to identify erratic and risky driving behaviour and link this to setting and adjusting insurance premiums

The government is also active in promoting safety in relation to young passengers and there is evidence that the levels of education and knowledge are good in this regard. This is a particularly hard road user group to reach out to and is recommended that much of the existing work is continued and refreshed as appropriate to keep the message up to date and as persuasive as possible. It is also recommended that the providers of school bus services conduct regular audits, if they are not already doing so, to ensure that the circumstances reported by children in the focus groups are not leading to risks to passengers. This work could also look at overcrowding on service bus journeys to identify if any children using these services are in receipt of free school transport and, if this is the case, what action might be taken.

## **6. ROAD SAFETY PLANNING IN NORTHERN IRELAND - THE NEXT STEPS**

### **6.1 Road Safety Strategy NI**

In Northern Ireland (NI) road safety is the responsibility of the Department of the Environment (DOE), supported by a number of road safety partners i.e. Department for Regional Development - Roads Service, Police Service of NI, NI Fire and Rescue Service, NI Ambulance Service and the Department of Education.

The planning and delivery of road safety activity is guided by NI's Road Safety Strategy to 2020 (published March 2011) which sets out the key challenges, vision and targets to be achieved over its 10 year lifespan. The implementation of almost 200 action measures set out in the Strategy will contribute to the delivery of the vision and the achievement of challenging casualty reduction targets by 2020.

The Strategy recognises the increased risk for young people and for those in rural areas in NI and includes *'focusing specifically on improving safety on rural roads'* and *'working particularly to protect young drivers (age range 16-24)'* among the key challenges to be addressed in the next 10 years.

A number of the action measures also focus particularly on young people and rural areas and, in many instances, these reflect the recommendations of the research. These include:

- Developing and implementing an updated and improved programme of measures to influence young people's attitudes and behaviours.

- Reassessing and improving the way that novice drivers first learn to drive and/or ride, are tested and continue to learn throughout their life.
- Consulting on proposals to amend the existing 45mph speed restriction on learner and restricted drivers and introduce a new system of Graduated Driver Licensing (GDL) to replace the current 'R' driver scheme.
- Exploring opportunities to provide enhanced road safety education for young people aged 16-24 through further education colleges, universities or apprenticeships.
- Continuing to develop alternative communication approaches to reach young people with road safety messages and improve the road safety presence on other media channels, including better use of social networking sites and other technology such as Bluetooth messaging.
- Improving the rural infrastructure.
- Undertaking and implementing the review of speed limits on upper tier rural roads following the publication of the outcome of the speed management review.
- Continuing to enhance the effectiveness of PSNI enforcement through the use of intelligence led policing strategies and technologies in line with the National Intelligence Model. This will lead to more targeted resources and enforcement aimed at reducing the numbers of people killed or seriously injured with particular reference to:
  - high risk locations, particularly in rural areas
  - high risk behaviours such as speeding, drink/drug driving, non-seat belt wearing
  - high risk groups such as young and inexperienced drivers and motorcyclists; and
  - continued cross border enforcement operations on high risk behaviours including speeding and drink driving.

Specific targets and key performance indicators will monitor the effectiveness of those interventions on an ongoing basis throughout the life of the Strategy.

These are:

#### **Targets:**

- To reduce the number of children (aged 0 to 15) killed or seriously injured in road collisions by at least 55% by 2020.
- To reduce the number of young people (aged 16 to 24) killed or seriously injured in road collisions by at least 55% by 2020.  
(all will be measured against a baseline of the 2004-2008 average figures).

#### **Key Performance Indicators:**

- Number of people killed in collisions on rural roads.
- Number of children killed in collisions on rural roads.
- Novice driver casualties: deaths and serious injuries within 6, 12 and 24 months of passing test.

- Number of killed or seriously injured casualties resulting from collisions involving drivers under the age of 25.

## **6.2 Progressing the research recommendations**

DOE and its road safety partners are currently considering how the key findings and recommendations of this research might be progressed within the context of the Road Safety Strategy including such interventions as new rules regarding driver training, heavier penalties for young people involved in collisions, increased and targeted enforcement and targeted publicity and education campaigns.

As the research has found there are already a number of measures being taken forward, or are planned within the 10 years of the Strategy, to tackle the issues involved so the challenge is now about building on that work in order to bring about a step change in behaviours, particularly those of young drivers and passengers.

Two key initiatives are currently being progressed in NI which will begin to contribute to that step change in this high risk group. These are:

- In January 2012 four new advertisements were launched as part of the 'Crashed Lives' DOE Road Safety Campaign. These ads tell the true-life stories of four young people who tragically lost their lives or were seriously injured in a collision. They highlight many high risk behaviours such as speeding, not wearing and seat belt and drinking and driving.
- DOE is moving ahead with plans to reform the learner and novice driver regimes, including the introduction of a new system of Graduated Driver Licensing (GDL).

In general, the research has clearly focused attention on the issue and has positioned it at the forefront of policy makers' minds in considering how they can improve the road safety of children and young people, particularly in rural areas. This is an issue that must be tackled in order that we can continue to reduce the number of casualties and collisions in NI.

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