NORTH EAST
Regional Road Safety Resource

Project Report: 25

Rural & Urban Collisions

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Contents

Introduction

This report has been produced by the North East Regional Road Safety Resource as an overview of collisions resulting in injury within rural and urban areas. The data used to produce this report is based on the project database of Stats 19 provided by Cleveland, Durham and Northumbria police forces.

The main aim of the report is to identify the different conditions in which collisions occur in rural areas compared to those that occur in urban areas. It is hoped that road safety practitioners will be able to use this analysis to target specific issues in their areas.

How are areas classified rural or urban?

For a detailed explanation of rural/urban classification please refer to the website of the Office of National Statistics (ONS).

In 2004, the rural/urban definition system was introduced so that a rural/urban view could be gained from Government statistics. The system defines the rurality of very small 2001 Census based geographies (often referred to as Output Areas). There are four main settlement types which each output area can fall into. Each of these settlement types are also assigned a regional grading of 'sparse' or 'less sparse' giving a total of 8 categories in all. These categories are listed below:

- Urban (sparse)
- Urban (less sparse)
- Town and Fringe (sparse)
- Town and Fringe (less sparse)
- Village (sparse)
- Village (less sparse)
- Hamlet & Isolated Dwellings (sparse)
- Hamlet & Isolated Dwellings (less sparse)

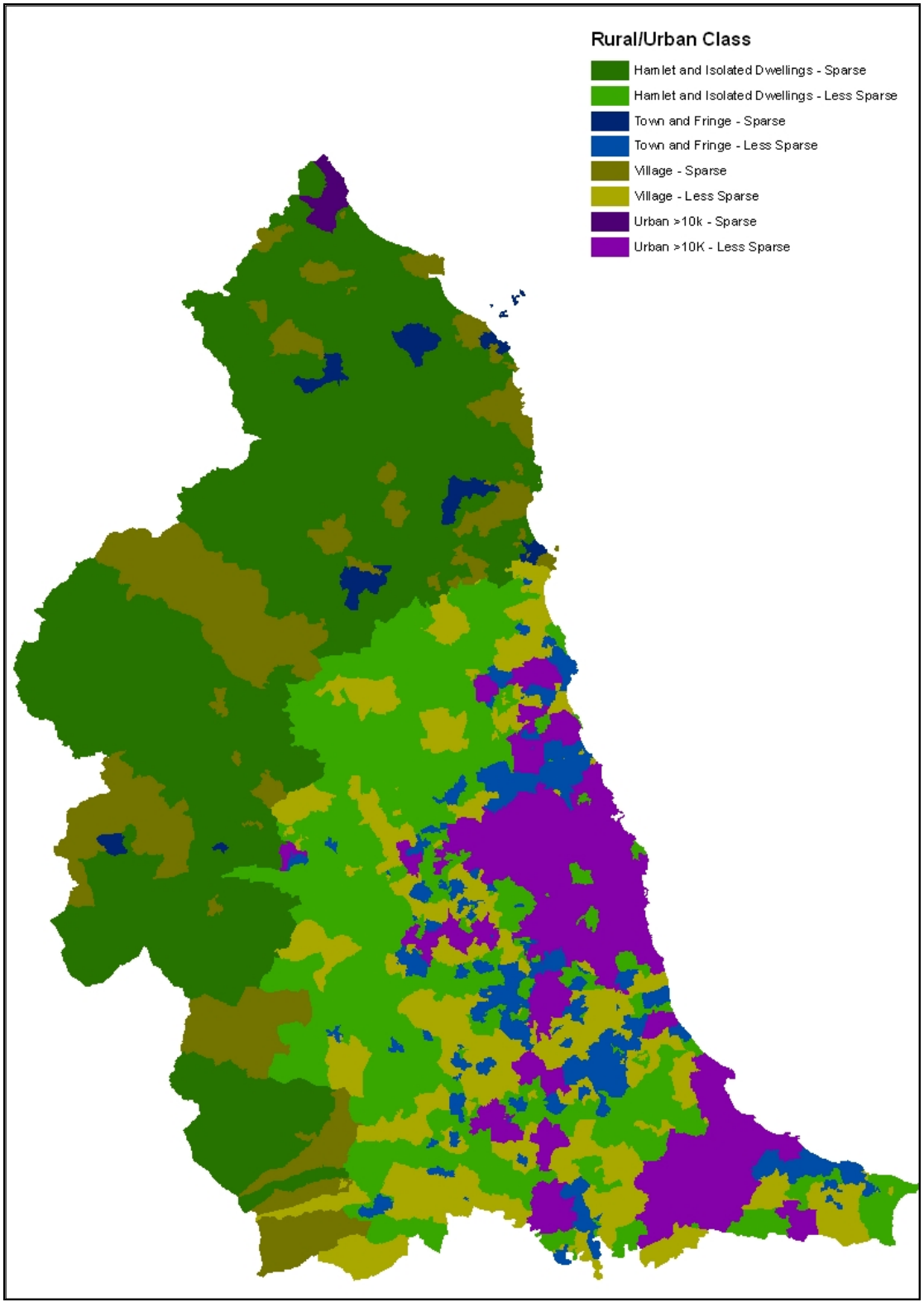
Urban

Rural

The classification of the census output areas is based upon settlement form and sparsity. This looks at the level of households within a given area and also the levels in neighbouring areas.

Figure 1 shows how the NE region is made up of both rural and urban areas.

Figure 1: NE Region by Rural/Urban Classification



Collision Profile 2007-2009

Collision levels vary depending on whether an area is rural or urban. 74% of collisions within the NE region occur in urban areas. This is probably unsurprising since urban areas have the highest population levels, highest driving frequency, highest traffic flows, and a large proportion of the road network within them. All of these factors will contribute to higher collision levels.

Figure 2: NE Collisions by Severity an Area, 2007-2009

	Collision Severity			All	KSI	Fatal
Area Type	**Fatal**	**Serious**	**Slight**	**%**	**%**	**%**
Hamlet & Isolated Dwellings - Less Sparse	32	229	1232	**7.4**	**9.4**	**14.2**
Hamlet & Isolated Dwellings - Sparse	11	106	349	**2.3**	**4.2**	**4.9**
Town and Fringe - Less Sparse	24	213	1443	**8.4**	**8.6**	**10.7**
Town and Fringe - Sparse	1	17	107	**0.6**	**0.6**	**0.4**
Urban >10K - Less Sparse	114	1705	12937	**73.4**	**65.7**	**50.7**
Urban >10K - Sparse	1	9	56	**0.3**	**0.4**	**0.4**
Village - Less Sparse	35	214	1016	**6.3**	**9.0**	**15.6**
Village - Sparse	7	52	194	**1.3**	**2.1**	**3.1**

From the table above it is also clear to see that housing density has an effect on collision levels with those areas deemed ‘less sparse’ showing higher collision levels than those deemed ‘sparse’. An area where housing is denser will naturally have a denser road network and most likely a higher population density too.

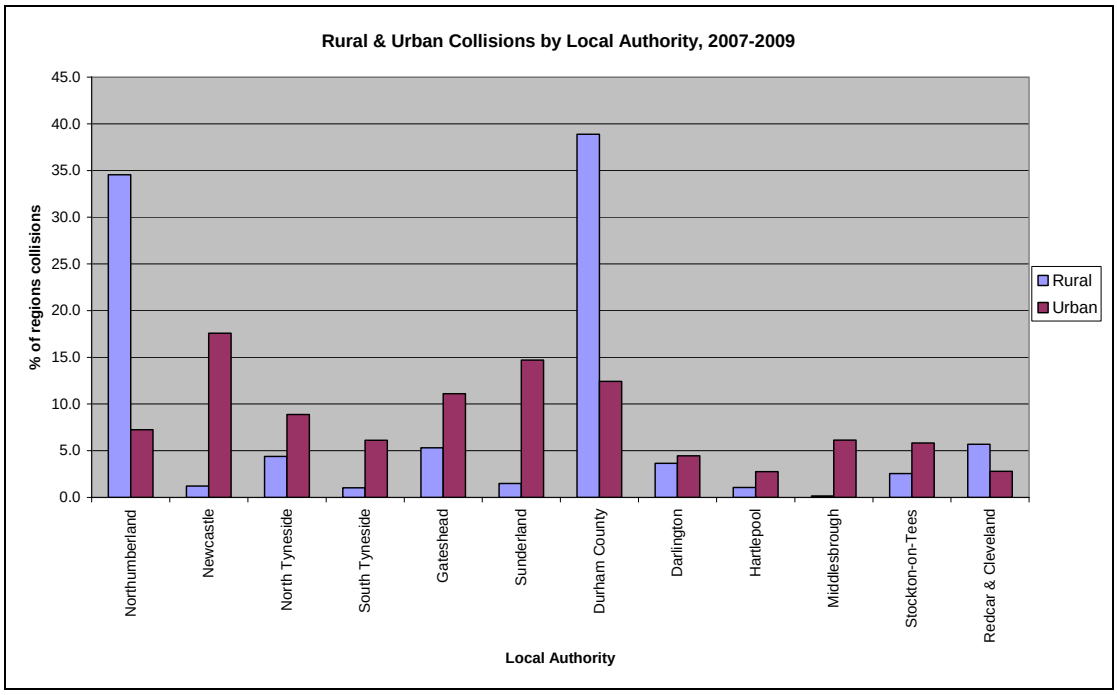
Collision severity would also appear to be effected by the structure of a given area. Rural areas account for a higher proportion of fatal collisions than urban areas. For example, ‘Hamlet & Isolated Dwellings – less sparse’ account for 7.4% of all collisions but 14.2% of fatal collisions (almost double the proportion). This pattern can be seen for almost all of the rural classifications.

Local Authority

As previously shown in Figure 1 the rural/urban make-up of the region is quite diverse with large areas dedicated to each category. Local authorities like Northumberland and Durham are mostly made up of rural areas and in contrast Newcastle and Middlesbrough are predominately urban areas.

Figure 3 shows how collisions differ within each local authority area. It shows what proportion of collisions occurred in rural/urban areas within each local authority. From the graph it is clear to see that Northumberland and Durham have the highest levels of collisions occurring in rural areas where as areas like the five Tyne & Wear authorities have the highest levels of urban collisions. However, given the make-up of these areas this pattern is not surprising.

Figure 3: Rural & Urban Collisions by Local Authority, 2007-2009



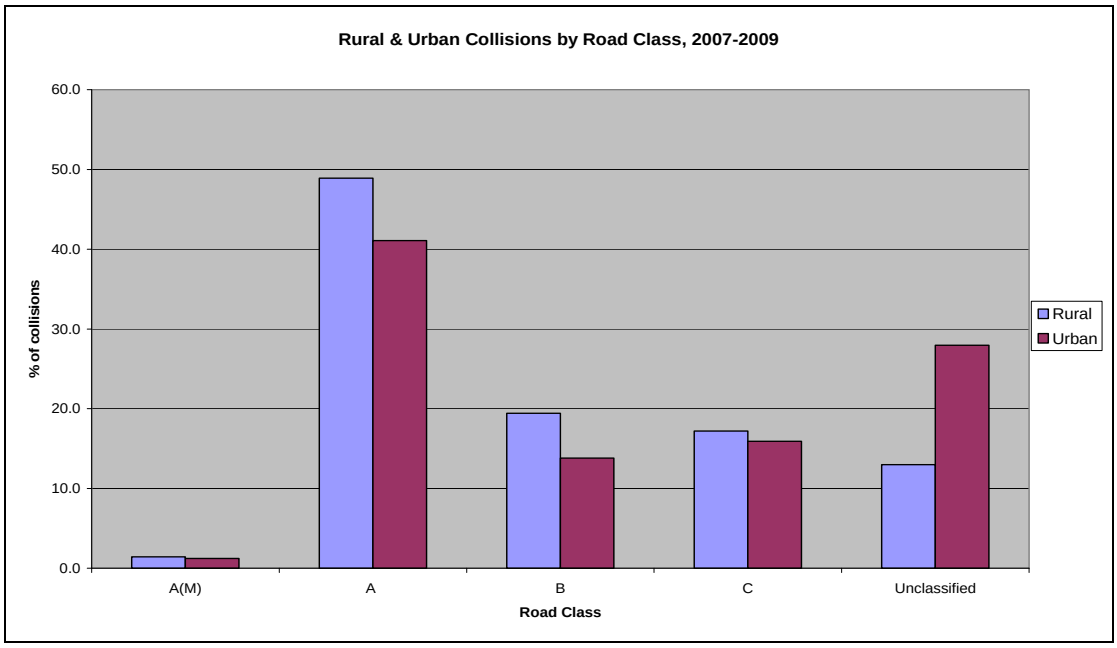
With such a high proportion of the region's rural collision, road safety practitioners should concentrate any rural campaign to the areas of Durham and Northumberland where these collisions are highest. With neighbouring authority boundaries, cross-working and co-ordination on such a campaign should easily be possible.

Road Layout

Analysis of the class of road on which both urban and rural collisions occur shows a different pattern for the two. This is not surprising as the road network for rural areas is very different to that of urban areas (where there is a larger proportion of 'unclassified' roads).

Figure 4 shows that almost 50% of rural collisions occur on 'A' class roads, and also show higher levels on 'B' and 'C' class roads than urban collisions. For urban collisions 'A' class roads still account for the highest level of collisions but there is a significant increase of collisions on 'Unclassified' roads.

Figure 4: Rural & Urban Collisions by Road Class, 2007-2009



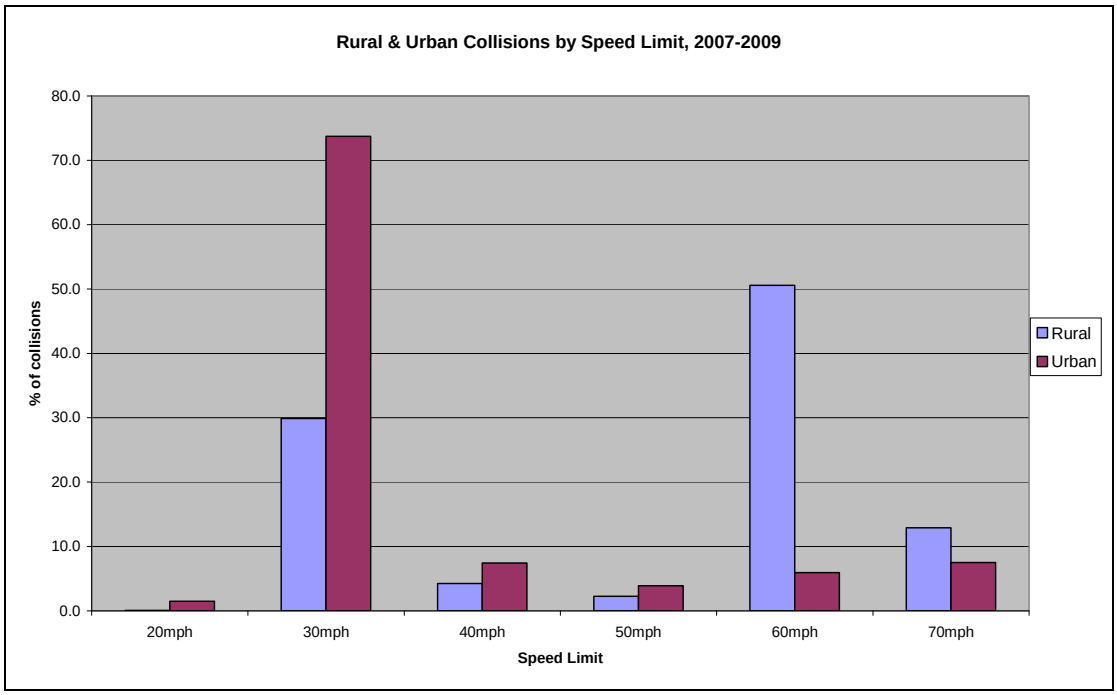
Further analysis of the road network, specifically collisions per road, shows a different pattern for rural and urban collisions. However, both do show long primary routes and trunk roads (i.e. the roads with high traffic flows and long length). The table below does not take into account collisions per length.

Figure 5: Rural & Urban Collisions by Road, 2007-2009

Rural Collisions	Urban Collisions
A1 (255)	A167 (534)
A19 (194)	A19 (396)
A68 (169)	A189 (340)
A689 (145)	A1 (330)
A69 (138)	A193 (302)

Speed limit analysis also shows a very different pattern for rural and urban collisions. This is shown in Figure 6. Rural collisions are highest on roads with a 60mph limit (national speed limits). This coupled with the high representation on 'A' class roads would suggest rural collisions are most common on the main arterial routes in the region, for example the A1 and A696. By contrast the majority of urban collisions occur within 30mph limits, i.e. lower speed roads. These roads make up a large proportion of the road network in urban areas. The high representation of urban collisions on 'A' class and 'Unclassified' roads would suggest that collisions are most common on the busy routes in/out of towns and cities and also within residential areas.

Figure 6: Rural & Urban Collisions by Speed Limit, 2007-2009



The final part of the road layout analysis is junction details. Naturally junctions are locations where two or more roads cross/meet and they take a variety of forms. They are most common in urban areas where the road network is most dense and so it is these urban areas where you'd expect to find the highest levels of junction related collisions.

Figures 7 and 8 show rural and urban collisions by junction type. It is immediately clear that the pattern for each is very different. As expected rural collisions are most likely to occur away from a junction, whereas urban collisions are more common at junctions. For both urban and rural areas the most common junction layout where collisions occur is the 'T or staggered' junction. The majority of these junctions are controlled by 'Give Way' lines and therefore a large amount of responsibility is placed upon drivers to use these correctly. Errors in driver judgement are unfortunately a common cause of collisions.

‘Crossroads’ and ‘Roundabouts’ are other junction types which show significantly higher proportions of collisions in urban areas compared to that seen in rural areas. However, as previously discussed both of these junctions are more common within the urban road network.

Figure 7: Rural Collisions by Junction Type, 2007-2009

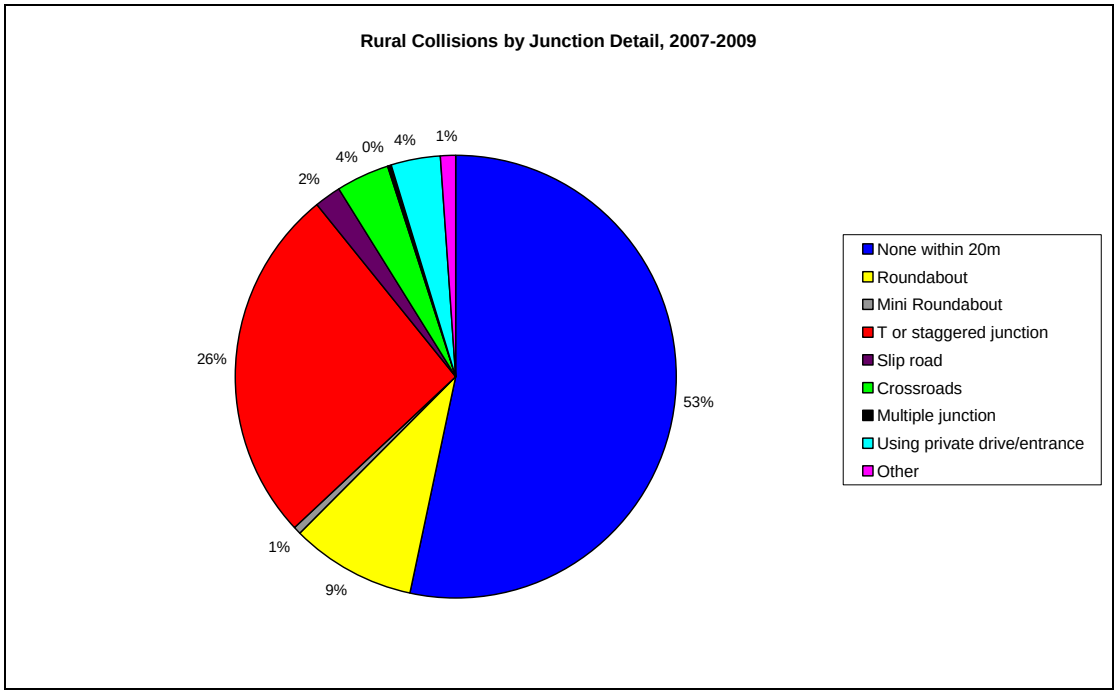
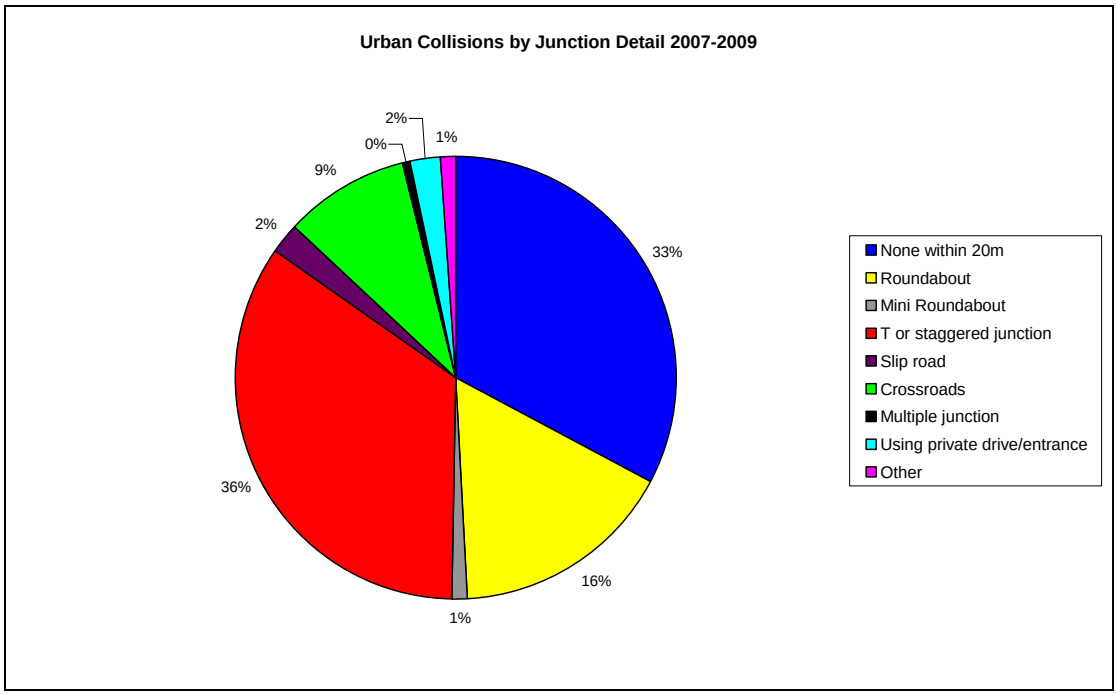


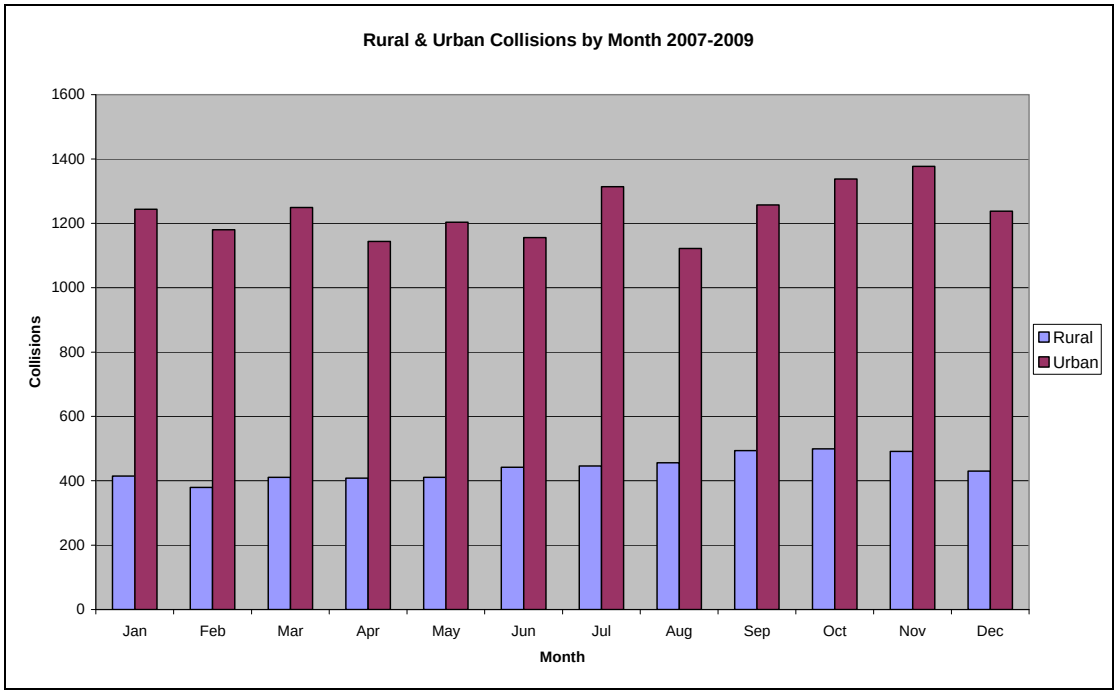
Figure 8: Urban Collisions by Junction Type, 2007-2009



Month, Day, and Time

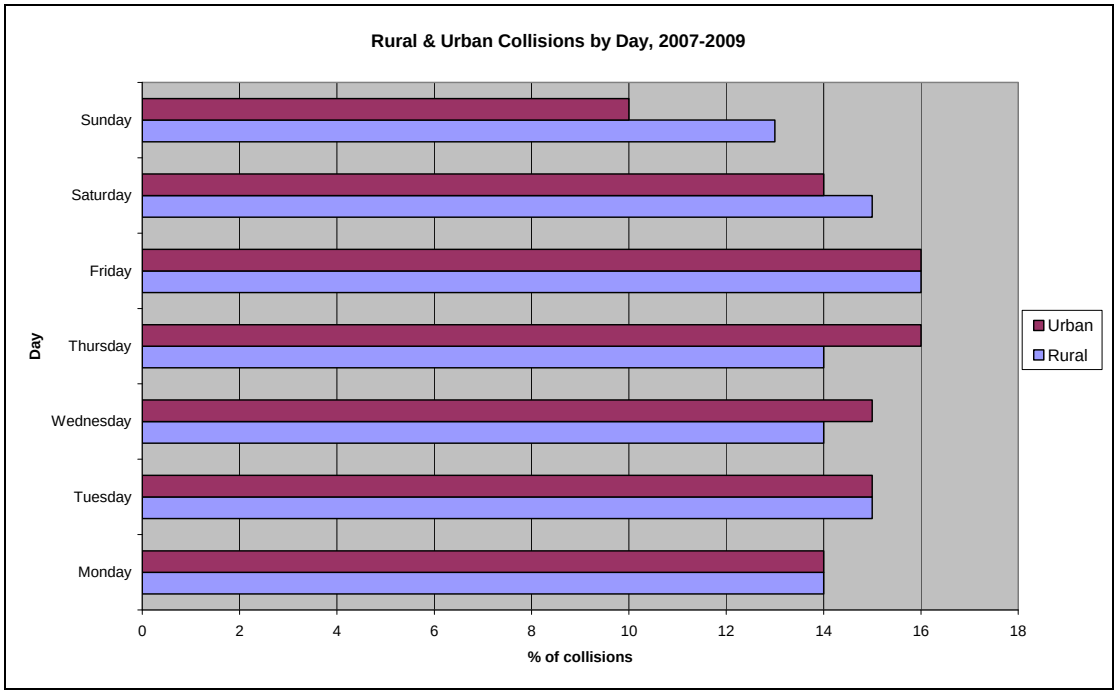
Collision levels in the NE are not constant month on month and vary throughout the year. Splitting the collisions by rural and urban areas also shows this pattern. However, it becomes clear by doing this that urban collisions vary and swing more than the rural collisions. Urban collisions show more of a wave pattern (with several peaks and troughs) where as rural collisions show a very gradual increase throughout the year (peaking in autumn).

Figure 9: Rural & Urban Collisions by Month, 2007-2009



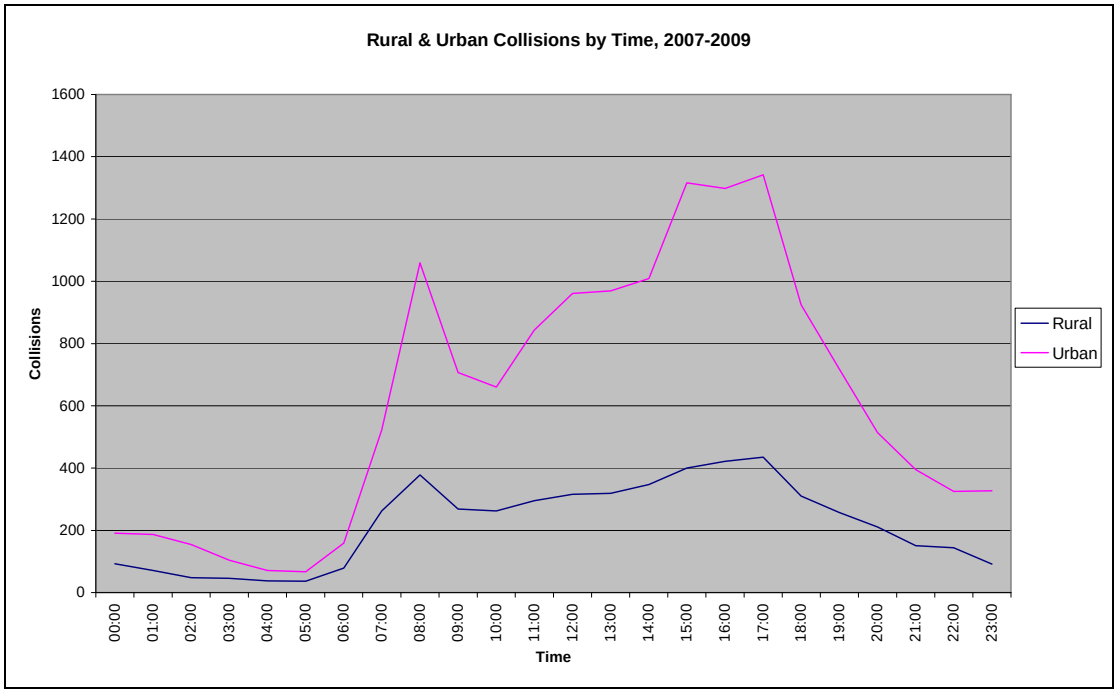
Analysis of the day of the week on which collisions occur shows different patterns for rural and urban areas. Urban collisions are fairly consistent throughout the working week (Monday-Friday) and then drop slightly at the weekend. This is in line with the times when traffic flows in these areas are highest; predominately due to commuting traffic. The rural collisions, surprisingly, follow a similar pattern in that the weekdays show significant levels of collisions. However, at the weekend the proportion of collisions in rural areas is higher than that of urban areas. A large part of this will be due to the increased use of vehicles for leisure purposes (for example motorcycle riding or drives in the country). By contrast traffic flows in urban areas are generally lower at the weekend.

Figure 10: Rural & Urban Collisions by Day, 2007-2009



Analysis of time of day shows that collisions in both urban and rural areas peak in line with key commuting times. These peaks are greatly exaggerated for the urban collisions. Both urban and rural areas show higher levels of the collisions in the afternoons.

Figure 11: Rural & Urban Collisions by Time, 2007-2009

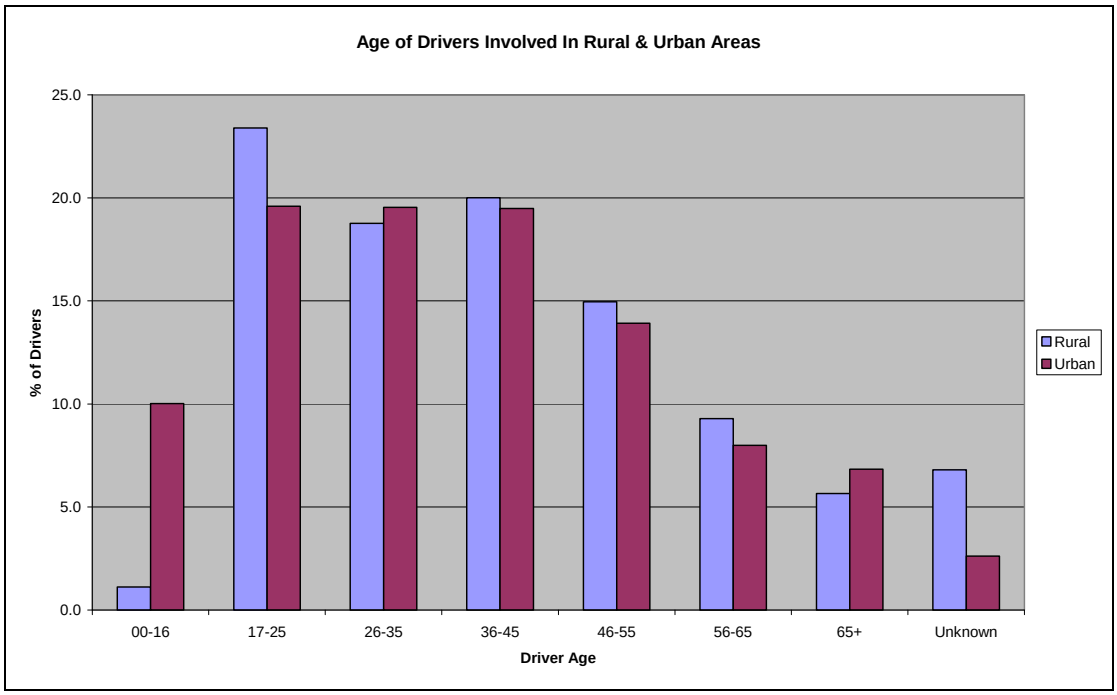


Drivers and Vehicles

When looking at the age of the drivers/riders involved in collisions within the NE region, the 'Young Driver' category is often over-represented in the data. This group accounts for drivers aged 17-25 years old. According to the DVLA this age group accounts for only 9% of the driving licences within the region but often accounts for a higher proportion of collisions.

Figure 11 shows the ages of drivers involved in both rural and urban collisions within the NE region. It is quite clear to see from this that the young driver category features prominently in collisions and is over-represented when compared to the 9% licence holding. However, it is also clear to see that this group features highest in the rural collisions. This could indicate a skills issue or a lack of experience of rural roads for young drivers. Another interesting point to pick up is the high representation of the 0-16 year old group on urban roads. This will be largely due to children riding their pedal cycles in residential areas and also 16 year olds on mopeds.

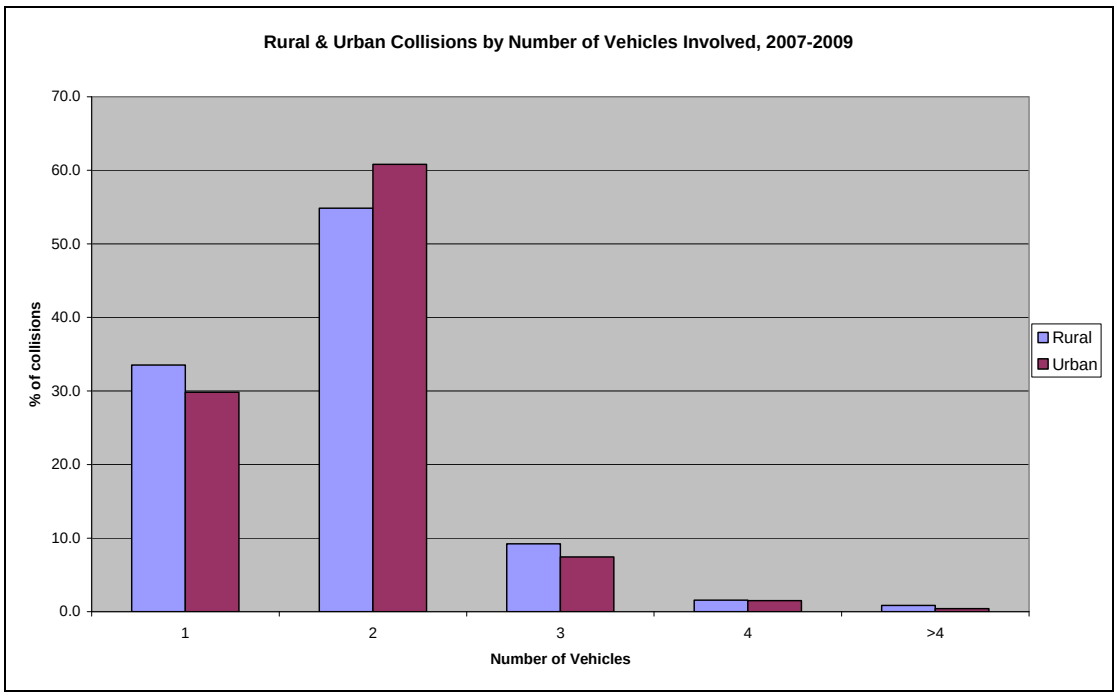
Figure 12: Age of Drivers Involved in Rural & Urban Collisions, 2007-2009



The make up of a collision differs depending on whether it occurs in a rural area or an urban area. The number of vehicles and pedestrians involved collisions being a large part of this difference. In urban areas pedestrians are involved in 19% of collisions compared to just 8% in rural areas. This is due to the large residential and commercial spots (where pedestrian numbers are higher) found inside urban areas.

Figure 13 shows the number of vehicles involved in both rural and urban collisions. The main difference that can be observed is between 1 and 2 vehicle collisions. Traffic flows are highest within urban areas and so there is far more vehicle interaction and therefore more chance of a vehicle to vehicle collision. The reverse is true for rural areas. However, this is only half the story. When looking at single vehicle collisions only, it is clear to see that pedestrians feature much more in urban collisions than rural collisions. Therefore in rural areas there are far more single vehicle only collisions than in urban areas, i.e. collisions where a driver/rider has lost control or hit a static object on the road side.

Figure 13: Number of Vehicles Involved in Rural & Urban Collisions, 2007-2009



In terms of vehicle type, the highest involvement in both urban and rural collisions is the car. On average cars are involved in 78% of both rural and urban collisions, with virtually no distinction between the two. This is to be expected as cars make up the majority of the road traffic on the region's road network.

There are however, some slight differences between urban and rural areas when looking at other vehicle types. Pedal cycles and Public Service Vehicles (PSV) show higher proportions in urban areas, where as Motorcycles and Goods Vehicles are slightly higher in rural areas.

Contributory Factors

Contributory factors are recorded as part of the Stats 19 data by the police. Analysis of these can help to ascertain where the attending police officer apportioned the primary cause for a collision. Although this data set is a little subjective (due to it being purely the police officer's opinion of the collision) it is still a good source of information to help identify any additional issues that may exist.

Figure 14 shows the most commonly used contributory factors in urban and rural collisions within the NE region. Please note that not all collisions are recorded with contributory factors and that more than one contributory factor can be recorded for each collision.

Figure 14: Contributory Factors Recorded in Rural & Urban Collisions, 2007-2009

Contributory Factor	Proportion of Rural Collisions	Proportion of Urban Collisions
Driver failed to look properly	29%	41%
Driver failed to judge other persons path or speed	16%	19%
Exceeding speed limit	6%	4%
Travelling too fast for conditions	13%	6%
Careless/reckless/in a hurry	17%	18%
Loss of control	17%	7%
Sudden braking	8%	8%
Poor turn or manoeuvre	13%	12%
Inexperienced or learner driver	6%	5%
Slippery road due to weather	16%	8%
Impaired by alcohol	6%	4%
Pedestrian failed to look properly	4%	12%
Pedestrian careless/reckless/in a hurry	1%	5%
Pedestrian failed to judge other persons path or speed	1%	3%
Pedestrian impaired by alcohol	1%	3%
Dangerous action in carriageway	1%	1%

Analysis of the contributory factors recorded in rural and urban collisions shows several key issues with road users. For both collision types driver judgement is still the most commonly used contributory factor with drivers failing to see other road users and/or failing to judge their movement. Lapses in concentration cause collisions and this is backed up in this data.

There are clear differences in the contributory factors between those collisions that occur in rural areas and those that occur in urban areas. The rural collisions show clear links to speeding and aggressive driving, with ‘Travelling too fast for conditions’ and ‘Loss of control’ featuring significantly higher in rural collisions than urban. In the urban collisions there is a greater emphasis in poor driver judgement and there is also a higher representation in pedestrian error too. This is probably to be expected as the nature of the urban road network requires drivers to make more judgements on a regular basis, and as previously discussed, there are higher pedestrian flows in these areas too.

Driver Profiles

Driver profiling can be used to identify and understand the ‘types’ of drivers involved in both urban and rural collisions in the NE area. Profiling is based upon the driver postcodes recorded on the Stats 19 forms. These are then run through a software package called Mosaic Public Sector, which places each into one of 15 ‘Groups’ and 69 ‘Types’ based on a variety of national data including the Census, British Crime Survey, and credit reports. This data is then compared to all postcodes within the NE area so that as well as real figures it is possible to see which profiles are over-represented in the data.

Urban Driver Profiles

The vast majority of drivers involved in urban collisions come from urban areas themselves. Mosaic shows that the ‘Groups’ which contain the highest driver numbers all have strong urban characteristics. These characteristics have a number of similarities from group to group which could help road safety practitioners to target specific ETP campaigns for urban driving. Some of the common characteristics which come from the Mosaic profiling are shown below along with communication and engagement techniques which these profiles are receptive to.

- *Social housing*
- *Affordable housing*
- *Low-Medium incomes*
- *Mixed levels of deprivation*
- *Family ties*
- *Careful with money*
- *Industrious*
- *Manual skills base but some white collar workers too*
- *Mainstream branding*
- *Some reliance on their cars*
- ***Responsive to TV, Telephone, Local Papers, and Face-to-face***
- ***Unresponsive to Post, National Papers, and the Internet***

Rural Driver Profiles

Drivers involved in rural collisions come from a diverse range of areas, from the dense urban areas right through to the isolated rural. This means that in some cases the drivers involved will be driving in an environment that they do not necessarily experience on a day-to-day basis. Such a diverse range will also make it harder for road safety practitioners to target specific ETP campaigns regarding rural driving; any campaign will need to be multi-layered. Some of the common characteristics which come from the Mosaic profiling are shown below along with communication and engagement techniques which these profiles are most responsive to.

- *Manual & white collar workers (including farmers)*
- *Mix of council, affordable, and large housing*
- *Married/family lifestyles*
- *High car reliance*
- *Middle aged*
- *Comfortable living*
- *Hard workers*
- *Generally few qualifications*
- *Some suburban living*
- *Value for money*
- ***Responsive to TV, Telephone, Internet, and Local papers***
- ***Unresponsive to Post, National papers, and Mobile/SMS***

Conclusions

This report has shown that there are different road safety issues in rural and urban areas. A blanket approach to these issues is unlikely to bring about efficient working or good results. Therefore road safety practitioners need to be targeted in their working. That said there are some similarities between the two collisions sets (e.g. Driver age and driver profiles) that could allow some multi-area campaigning.

Urban collisions make up the largest proportion of the region's collisions and will require a lot of time and resource to decrease them. Many of the 12 local authorities are predominately urban (e.g. Middlesbrough and Newcastle) and should concentrate in the main on the urban trends and patterns. By contrast those local authorities with a mix of urban and rural areas (e.g. Northumberland, Durham, and Redcar & Cleveland) will need to take note of both trends and plan campaigns to tackle both issues. This should achieve the best casualty reduction results.