

NORTH EAST Regional Road Safety Resource

Project Report: 28

Northumberland Area Overview, 2006 – 2010

**Including Performance Information on National Targets,
Analysis of Pedestrian, Pedal Cyclist, Motorcyclist and Car
Occupant Casualties, and Proposals for Further Investigation**

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Summary of Key Findings from Northumberland Area Overview

- Between 2006 and 2010, there have been a total of 6,936 casualties on Northumberland's roads. Of these casualties, 6,038 were slight, 811 were serious and 87 were fatal.
- The number of Child KSI (Killed or Seriously Injured) Casualties has increased to over the 2010 target for Northumberland, but both other targets were achieved. Please note that for the purposes of this report, a 'child' is regarded as being anyone under the age of 16.
- While the majority of total casualties and KSI casualties in Northumberland are car occupants, the statistics show that when a vulnerable road user (pedestrian, pedal cyclist or motorcyclist) is involved in a collision, it is more likely that they will become a KSI casualty than a car occupant.
- Between 2006 and 2010, pedestrian casualties have accounted for around 7% of total casualties and 13% of KSI casualties in Northumberland.
- Over the past eight years there has been a general downward trend in the number of adult and child pedestrian casualties, although there has been a slight rise in 2010 for both.
- The worst months for adult pedestrian casualties are September and October, while for child pedestrian casualties it is July to October.
- Pedestrian casualties are generally higher during the week as opposed to the weekend, with the majority of child pedestrian casualties being clustered around school opening and closing times.
- There is a definite problem with child pedestrian casualties on unclassified roads. This implies that most children are involved in collisions on residential urban streets.
- Between 2006 and 2010, pedal cyclist casualties have accounted for around 5% of total casualties and 7% of KSI casualties in Northumberland.
- Over the last eight years there has been a general downward trend in child pedal cyclist casualties, although the number of adult pedal cyclist casualties has been increasing over the same period.
- The number of adult pedal cyclist casualties increases from January to June, where it peaks and then gradually decreases back to January. For child pedal cyclists there are two peaks in April and July, possibly coinciding with school holidays.
- Most pedal cyclist casualties occur on weekdays, although the numbers still remain fairly high over the weekend.
- Adult pedal cyclist casualties peak at key commuting times during the day while child casualties tend to peak in the early evening. This coincides with the road class where the casualties occurred – adults being on 'A' roads, which would

generally indicate commuting to and from work, while children being on 'Unclassified' roads that would imply recreational activity close to home after school.

- Between 2006 and 2010, motorcyclist casualties have accounted for around 8% of total casualties and 24% of KSI casualties in Northumberland.
- Casualties of motorcyclists have been decreasing over the last five years, although riders of motorcycles with an engine size of over 500cc still make up the majority of casualties.
- A motorcycle rider aged 17-25 is more likely to have a casualty on a bike sized between 50 and 125cc, while for all riders aged over 25, sizes other than 500cc do not have any significant numbers of casualties.
- The majority of casualties on motorcycles over 500cc happen between April and September and mainly on the weekend, while for all motorcycle engine sizes under 500cc casualties are spread fairly evenly throughout the week and the year.
- Most motorcycle casualties happen on 'A' class roads, but in terms of the speed limit (and therefore location of the road), casualties on motorcycles over 500cc are most numerous on 60mph roads, while those under 500cc are most frequent at 30mph. This implies that motorcycles under 500cc are used for urban driving while those over 500cc are driven rurally.
- Between 2006 and 2010, car occupant casualties have accounted for around 71% of total casualties and 50% of KSI casualties in Northumberland.
- Car occupants make up the largest number of casualties on Northumberland's roads, and amongst car occupants, casualties in cars driven by young drivers (those aged 17-25 years old) account for around a third of these.
- The general trend over the last five years has been a decrease in the number of casualties, both in cars driven by young drivers and by other drivers (all drivers not aged 17-25).
- Monthly, the number of casualties in cars driven by young drivers remains fairly consistent, while for other drivers, the number of casualties peaks between August and December.
- Casualties in cars driven by young drivers tend to increase over the weekend, and on the weekend, the number of casualties tends to be greater from late afternoon onwards. During the week the number of casualties is greatest around the usual commuting times of 08:00, 12:00 and 17:00.
- Most casualties amongst car occupants occur on 'A' class roads, and most casualties occur on roads that have a 60mph speed limit.

Introduction

This report was produced by the North East Regional Road Safety Resource as an overview of road safety issues in the Northumberland area. The report investigates the progress made in the reduction of road traffic casualties against the various 2010 targets set by the Department for Transport (DfT). It then goes on to analyse in greater detail the data behind the four main casualty types within Northumberland: Pedestrians, Pedal Cyclists, Motorcyclists and Car Occupants. Finally there are a few suggestions put forward for further investigation that may be desired.

The data used to produce this report has been extracted from the regional collision database which holds the Stats 19 data for the three police forces within the North East region. The database is checked and verified by the police forces and the DfT to ensure accuracy and conformity.

NE Regional Road Safety Resource

The resource was set up in April 2007 under the DfT's road safety grant scheme and is now funded through three road safety forums within the region. Its main aim is to promote the use of data and intelligence in the planning and implementation of road safety campaigns, and operates as the only regional data resource in the North East region. The resource hosts the regional collision database which pulls together the Stats 19 data from Durham, Cleveland, and Northumbria police forces.

For further information regarding the resource and examples of the work it carries out please visit www.neroadsafety.org.uk

National Progress to 2010 Targets

In 2000, the DfT set several casualty reduction targets for all local authorities to achieve by 2010. These targets were published in the document entitled *Tomorrow's Roads: Safer for Everyone*. The casualty reduction targets were set against a baseline dataset taken from the 1994 -1998 yearly average.

The three main casualty reduction targets set by DfT, which local authorities should have achieved by the end of 2010 were:

- A 40% reduction in the number of people killed or seriously injured (KSI) in road traffic collisions.
- A 50% reduction in the number of children (those aged under 16 years) killed or seriously injured in road traffic collisions.
- A 10% reduction in the slight injury casualty rate.

The DfT monitors the progress of all local authorities (and regions) against these trends and publishes the results every year. In June 2011, the main results for the period up to the end of the 2010 calendar year were released. Nationally, all three targets have been achieved. Figures 1-3 show the national picture in terms of casualty reduction.

Figure 1: National KSI Casualties

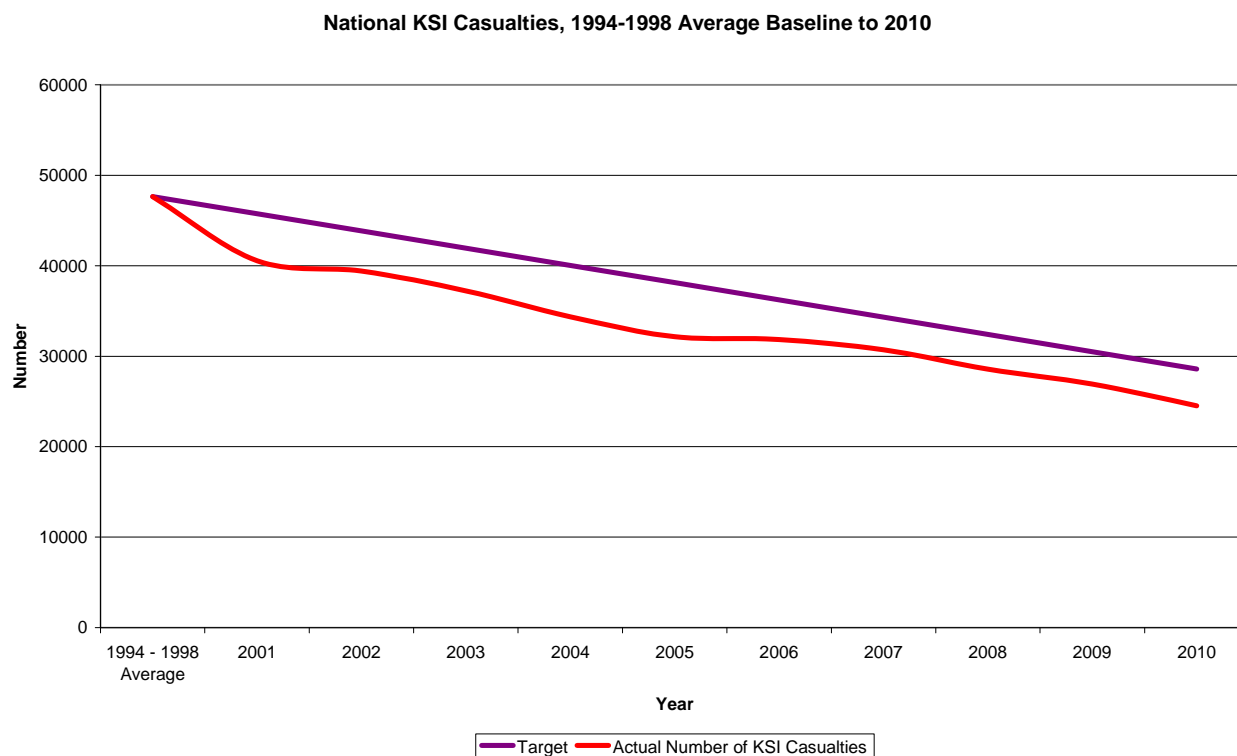


Figure 2: National Child KSI Casualties

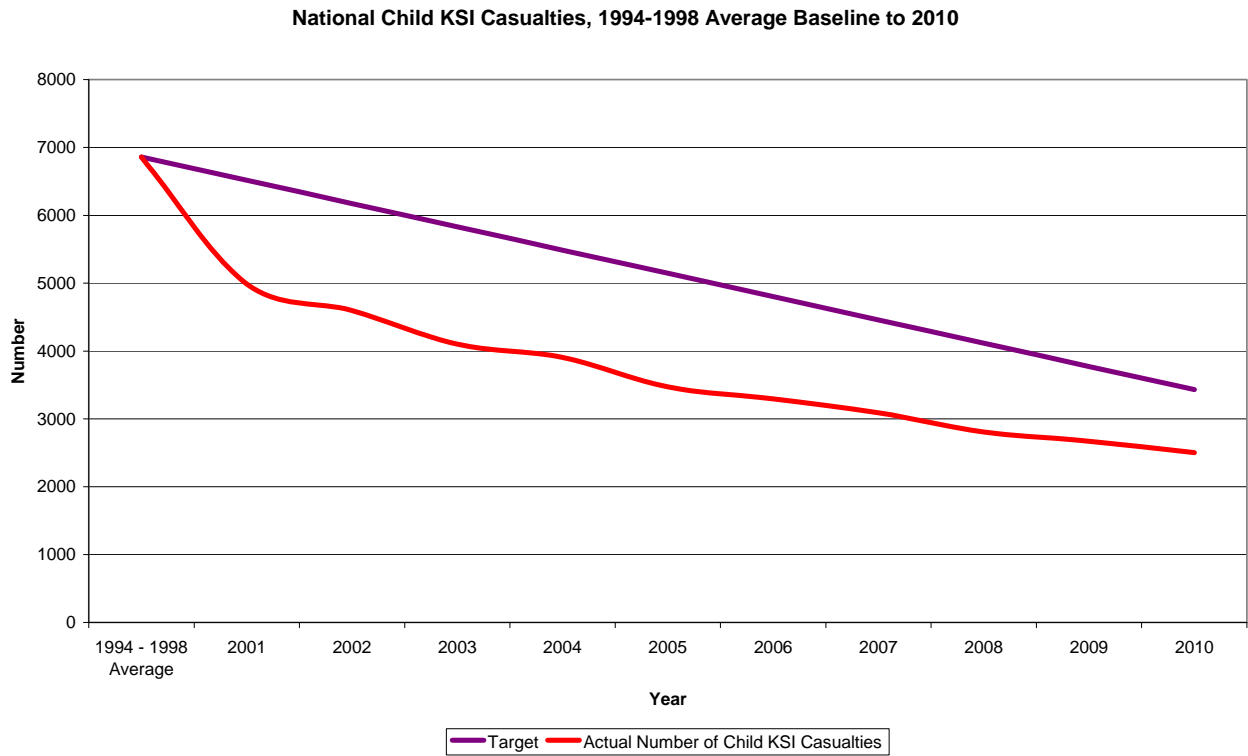
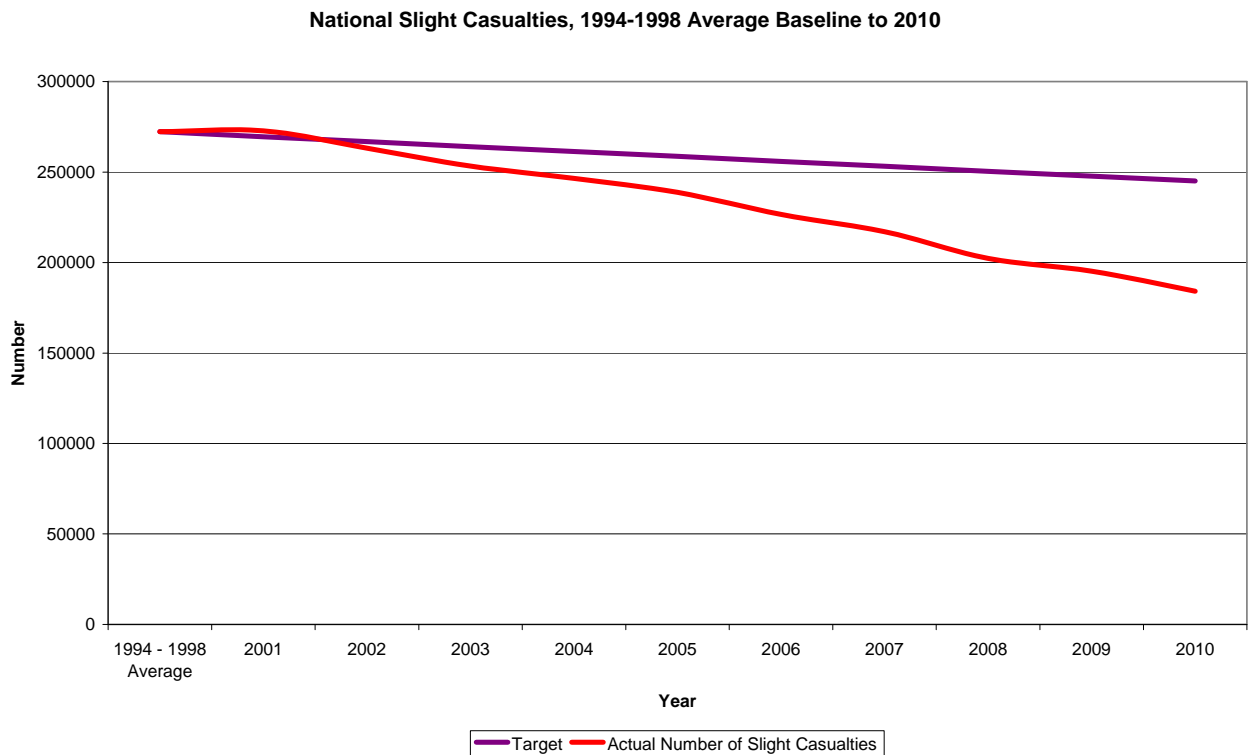


Figure 3: National Slight Casualties



Regional Progress to 2010 Targets

The North East of England contains 12 local authorities, three police forces, and four fire and rescue services, all of which have a statutory obligation for road safety. For the past 10 years the road safety efforts of these organisations have primarily been aimed at achieving the 2010 targets set by DfT. Figures 4-6 show the progress of the North East region against the 2010 targets. Again, all three targets were achieved. Both slight and child KSI targets were met comfortably and the 'All KSI Casualties' target was met despite fluctuating numbers in recent years.

Figure 4: North East Regional KSI Casualties

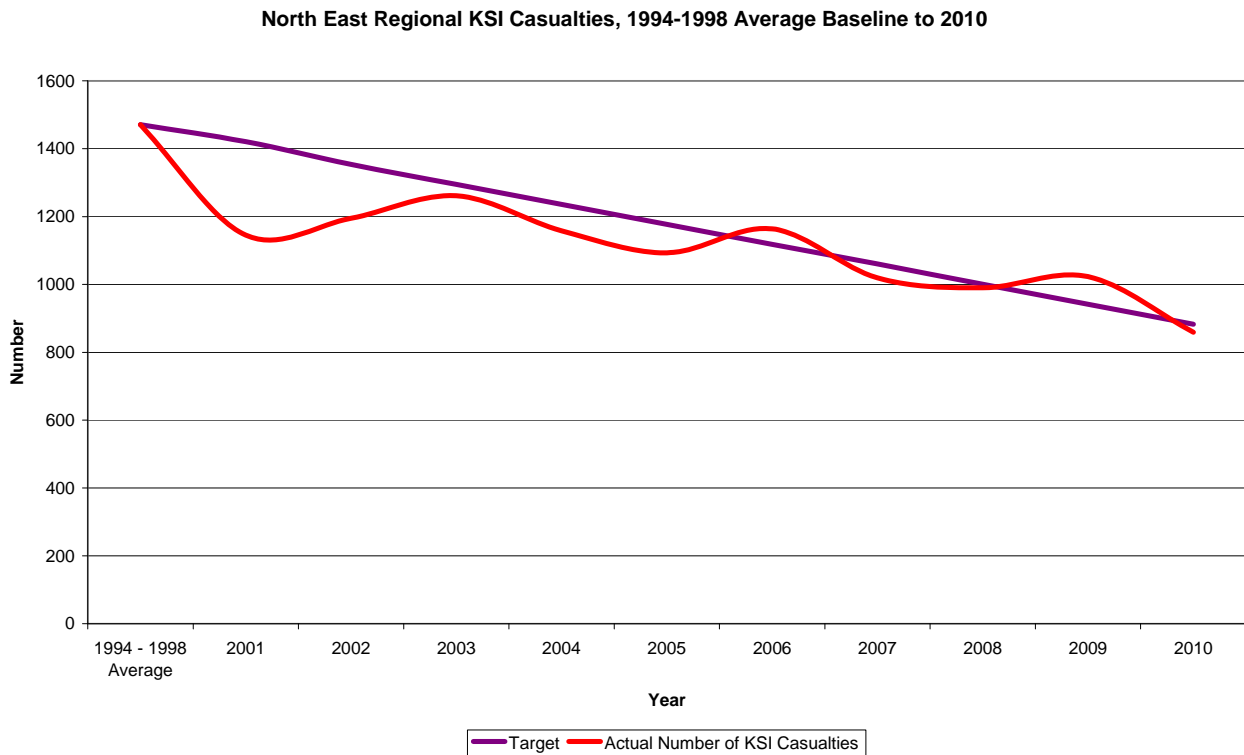


Figure 5: North East Regional Child KSI Casualties

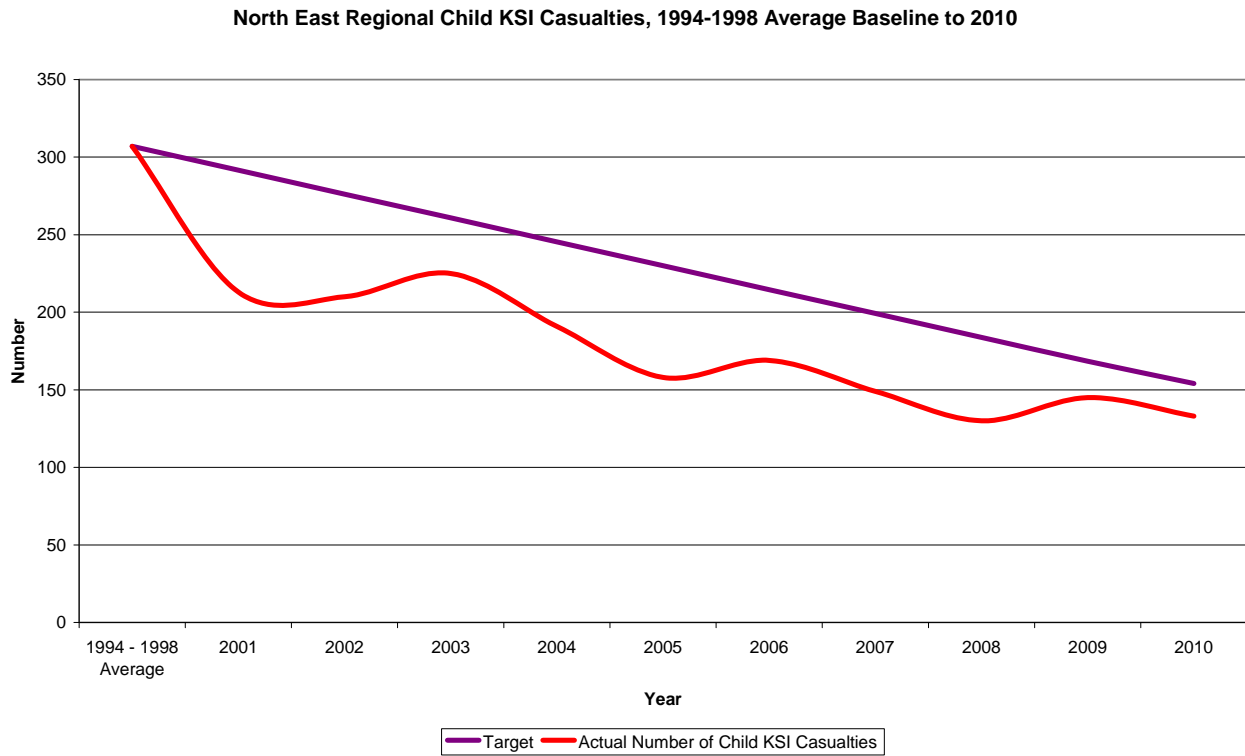
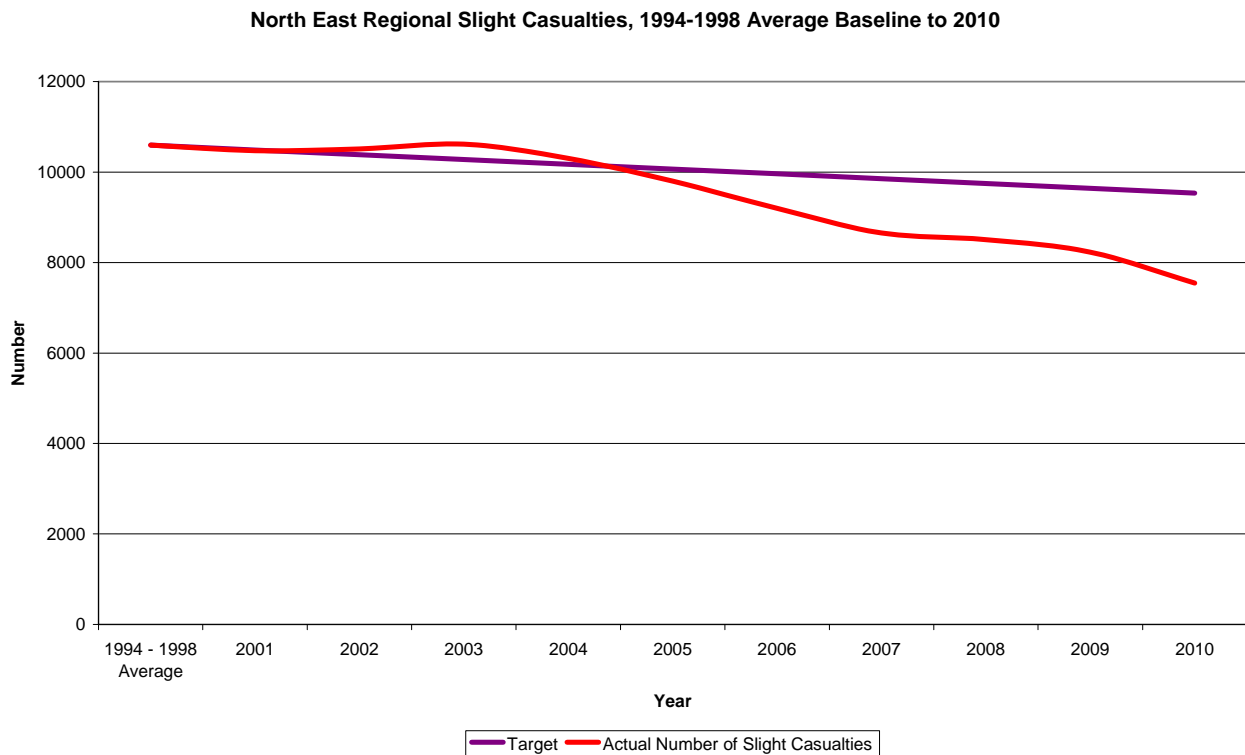


Figure 6: North East Regional Slight Casualties



Northumberland's Progress to 2010 Targets

Northumberland County Council became a unitary authority in April 2007. Before this date it was made up of six districts: Alnwick, Berwick-upon-Tweed, Morpeth, Blyth Valley, Wansbeck, and Tynedale. Northumberland is one of the largest geographical areas within the North East region and falls within the jurisdiction of Northumbria Police and Northumberland Fire and Rescue Service. All of these public bodies have a statutory obligation to address road safety issues and attempt to reduce road traffic casualties. As a result the Northumberland Road Safety Group was created to help co-ordinate road safety activity in the area. This forum is an excellent example of joint working between different organisations who share a common goal.

As a local authority area, Northumberland has a statutory obligation for road safety and is subject to the road safety targets set by the DfT for casualty reduction in 2010. Figures 7-9 show how the Northumberland area has performed over the past 10 years against these DfT targets. Unfortunately, the target for child KSI casualties was missed, although unlike the other two measures (which both met target), 2010 was the only year that the number of child KSI casualties went above the target figure. It is also worth noting that due to the very low number of child KSI casualties, a slight increase in the number of casualties does lead to a large increase in the variance to target. This means that even though the eventual variance to target was +22.6%, if there had been four less child KSI casualties, the target would have been achieved.

Figure 7: Northumberland KSI Casualties

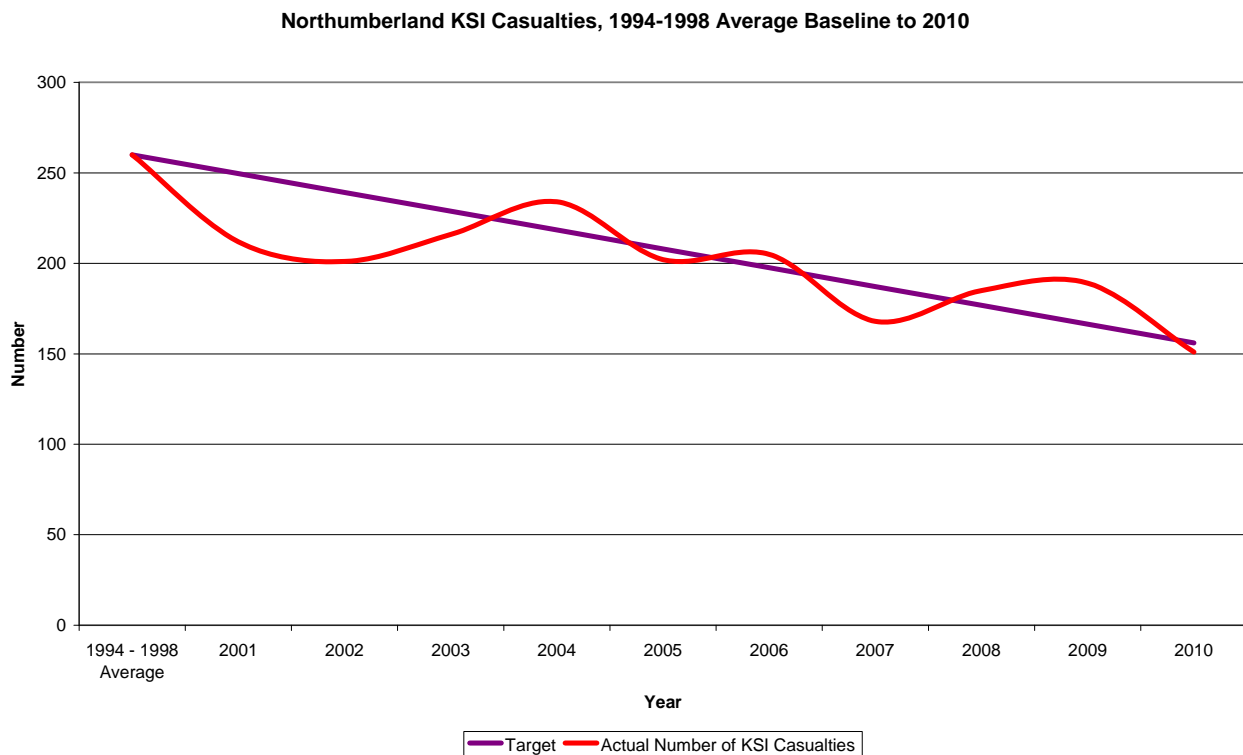


Figure 8: Northumberland Child KSI Casualties

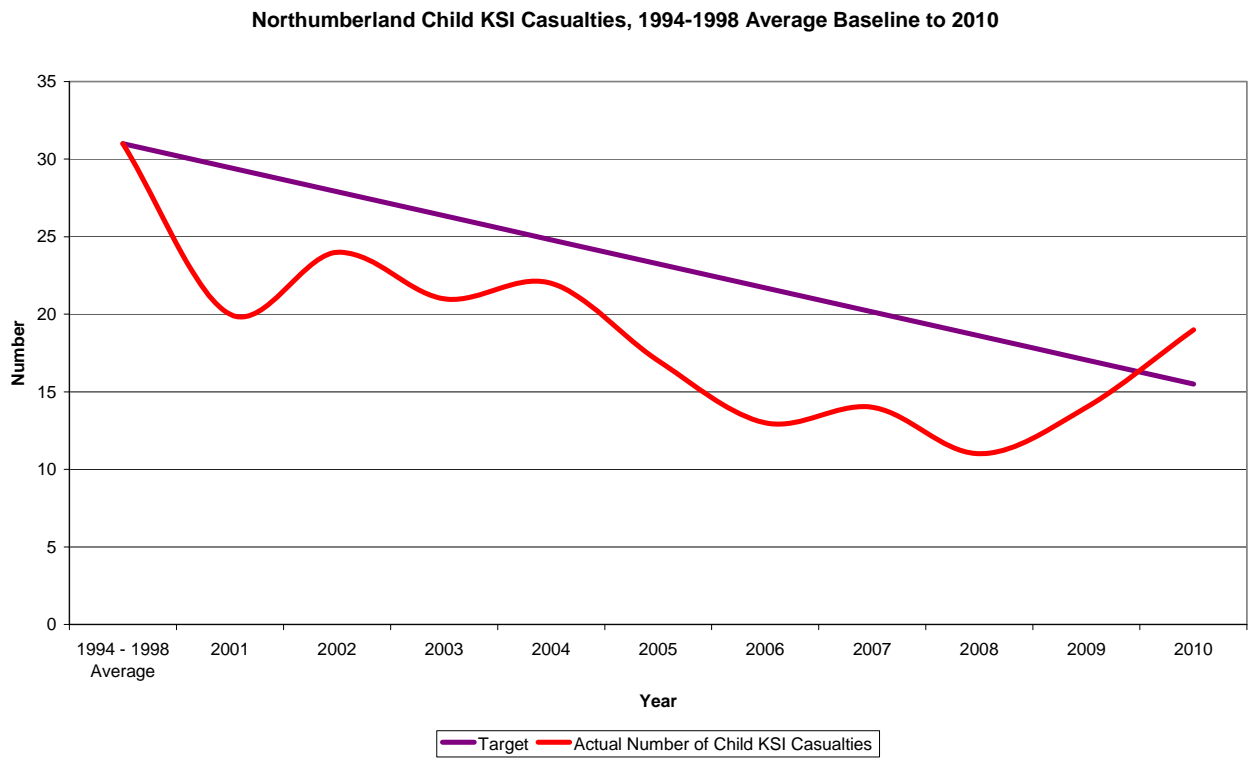
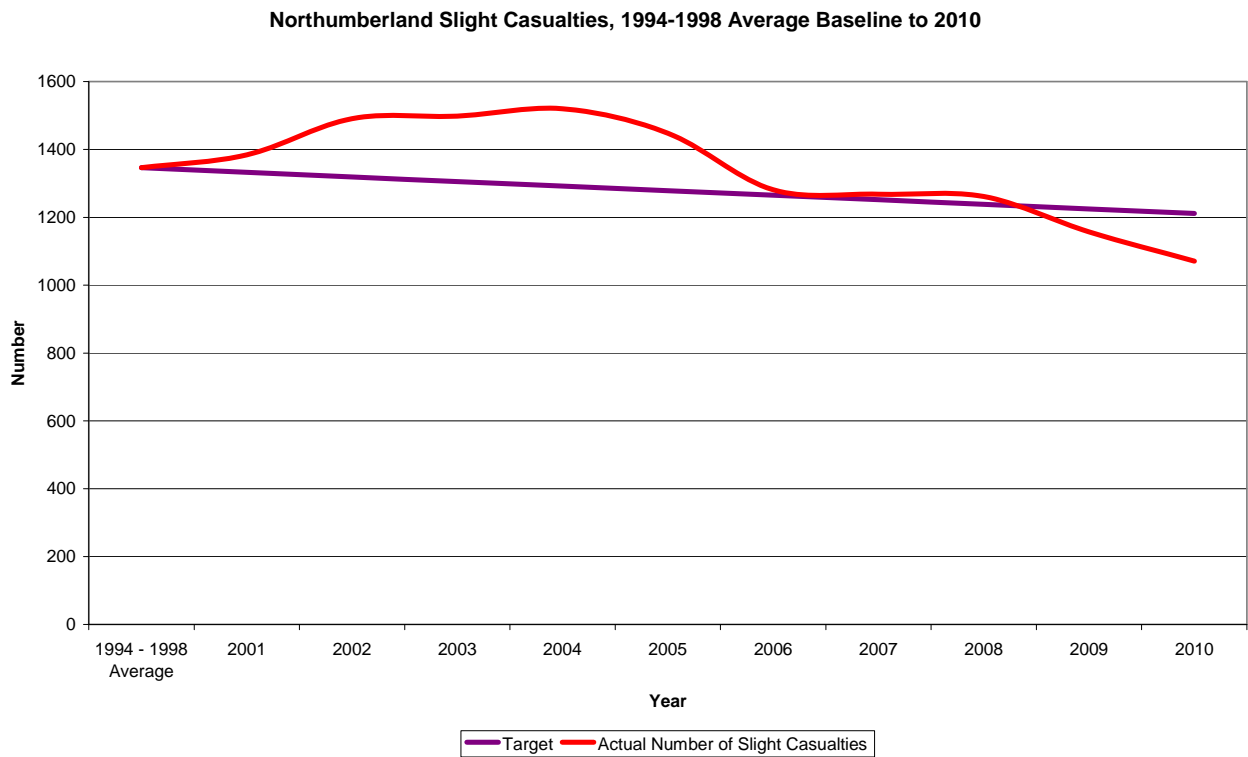


Figure 9: Northumberland Slight Casualties



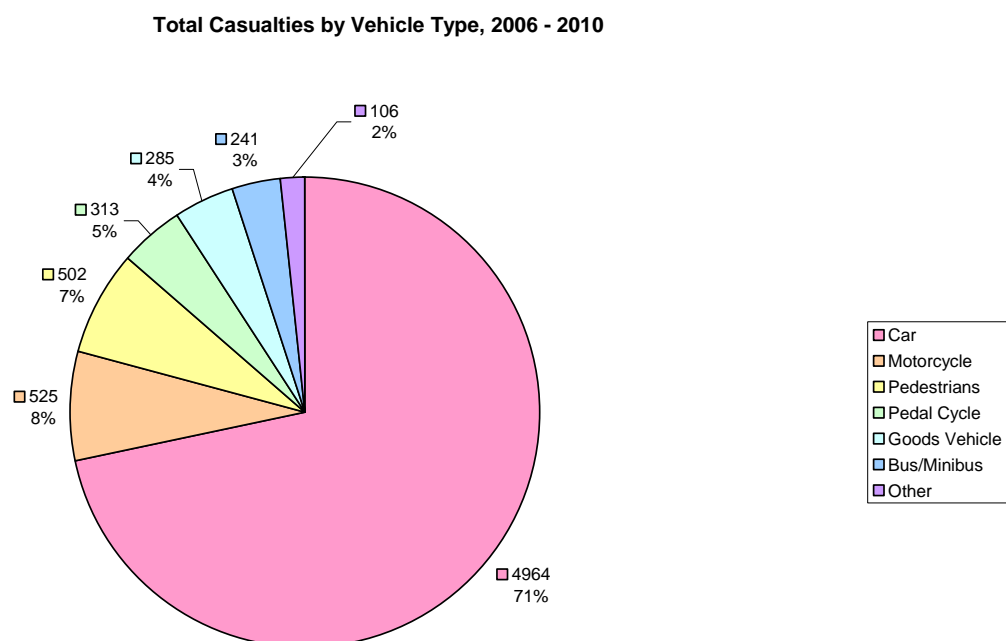
Summary of Casualties in Northumberland, 2006 - 2010

Between 2006 and 2010, there have been a total of 6,936 casualties on Northumberland's roads. Of these casualties, 6,038 were slight, 811 were serious and 87 were fatal.

Looking in more detail at these high-level figures, we can see that there is a significant difference between the types of vehicles that get involved in collisions that caused these casualties. When looking at casualties associated with vehicle type, it is important to note that the Stats 19 form requires the reporting police officer to code a casualty within/on a vehicle by the type of vehicle that they are in/on, and not the type of vehicle that they think caused the collision. In addition to this, in the case of a pedestrian casualty, the vehicle type is recorded as the vehicle that first struck the pedestrian, which would not necessarily be the same vehicle that was responsible for the situation that caused the pedestrian casualty. Therefore, using the example of car occupants, we cannot necessarily say that the large number of casualties in cars means that cars cause the most casualties, only that they are the largest casualty group. As a result, what we can see from these figures is the number of casualties within the various vehicle types involved in collisions, and how severe these casualties were.

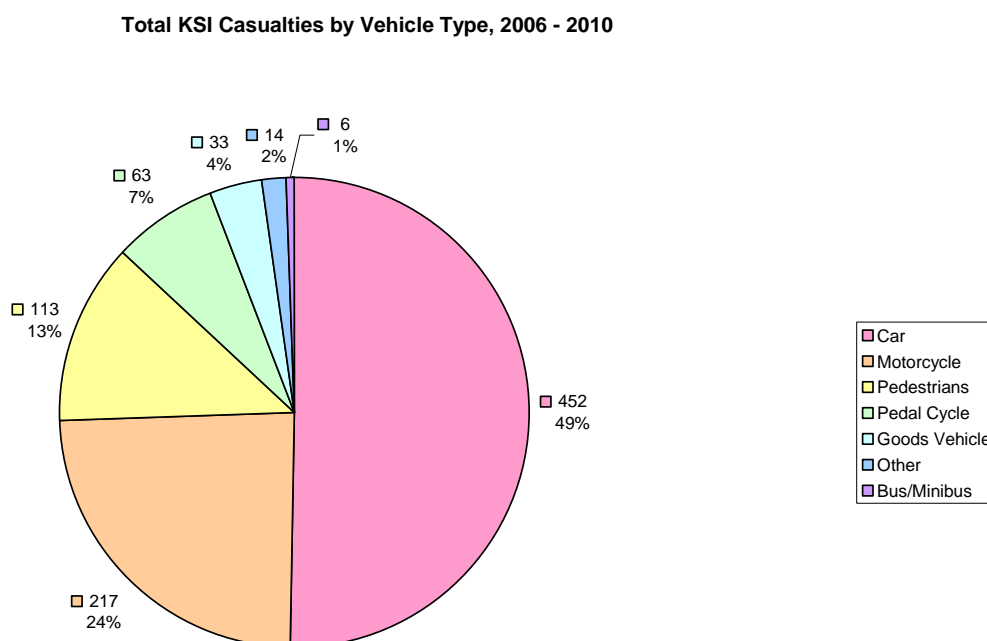
Looking at the overall casualties displayed in Figure 10, it is clear that the vast majority of casualties in Northumberland between 2006 and 2010 were amongst car occupants (71%), with motorcyclists, pedestrians and pedal cyclists making up only 20% between them.

Figure 10: Total Casualties by Vehicle Type



However, looking at KSI casualties in Figure 11, a different pattern can be seen. While the number of KSI casualties who were car occupants is still much higher than non-car KSI casualties, at roughly 50% it is significantly lower than the percentage of total casualties who were car occupants (which was around 70%). This decrease is explained when we look at which categories have increased, specifically motorcyclists, pedal cyclists and pedestrians. These vulnerable road user categories make up almost 45% of all KSI casualties. Therefore, it can be seen that if an individual from one of these vulnerable road user groups is involved in a collision, it is much more likely that the outcome will be more severe than it would have been for a car occupant.

Figure 11: KSI Casualties by Vehicle Type



The next sections of this report will look in more detail at these three more vulnerable road user groups, as well as car occupants, who still make up the majority of collision casualties.

Pedestrian Casualties in Northumberland

Pedestrians are generally regarded as 'vulnerable' road users. Compared to other road users (for example car drivers) they have very little personal protection if involved in a road traffic collision, so are potentially at greater risk of being seriously injured or killed in a collision.

Over the past five years pedestrian casualties have accounted for around 7% of all casualties in Northumberland. However, this figure rises to 13% when looking at the purely KSI casualties. These higher levels observed in the more severe classes of injury show how vulnerable pedestrians are as a road user group.

Due to the nature of their respective daily activities, adult and child pedestrian casualties have slightly different trends and patterns. Therefore for the purposes of this report they will be analysed separately. 'Children' are taken to be all people under the age of 16.

Figures 12 and 13 show how the levels of adult and child pedestrian casualties have changed over the past 12 years compared to the 1994-98 baseline average. To best represent this information, two types of graph are shown. The first type of graph used for Figure 12 is a stacked clustered column graph, which shows the numbers of adult and child casualties for each year next to each other. Each column is then divided in two representing the number of casualties that were KSI and the number that were slight. The total number included above the column is the number of total casualties for that age group in that year. Finally, a line is shown to emphasise the number of total adult and child casualties over the period. The second type of graph shown in Figure 13 is a 100% stacked clustered column graph, which shows the percentage make up of the severity of adult and child casualties for each year. This type of graph takes the total number of casualties for that year to be 100% and then displays the percentage of those total casualties that were KSI or slight.

When reading these two graphs together we can begin to draw some useful conclusions about the level of pedestrian casualties over the last 17 years. We can see from Figure 12 that the trend in both adult and child casualties has been decreasing since 2003, however, in the last two years, the number of child casualties has increased. A slightly more troubling observation comes when we look at Figure 13, where we can see that the percentage of child casualties that were KSI rose above that of adults in 2010, when for the previous nine years it had remained lower. For adult casualties, Figure 12 shows that the total numbers of casualties has been reducing, and Figure 13 confirms that the percentage of KSIs has remained fairly consistent with this change, with around 25% of adult casualties being KSI for the last seven years.

One final thing to note however is the low numbers of total casualties. This affects the overall percentages because when there are a low number of total casualties (as with children in 2008 for example), it only takes one or two KSIs to cause the ratio of KSIs to slight casualties to change significantly. Therefore, care should be taken when using these figures, which is why I have included both types of graph to ensure that a more rounded picture can be seen.

Figure 12: Severity of Adult and Child Pedestrian Casualties by Year

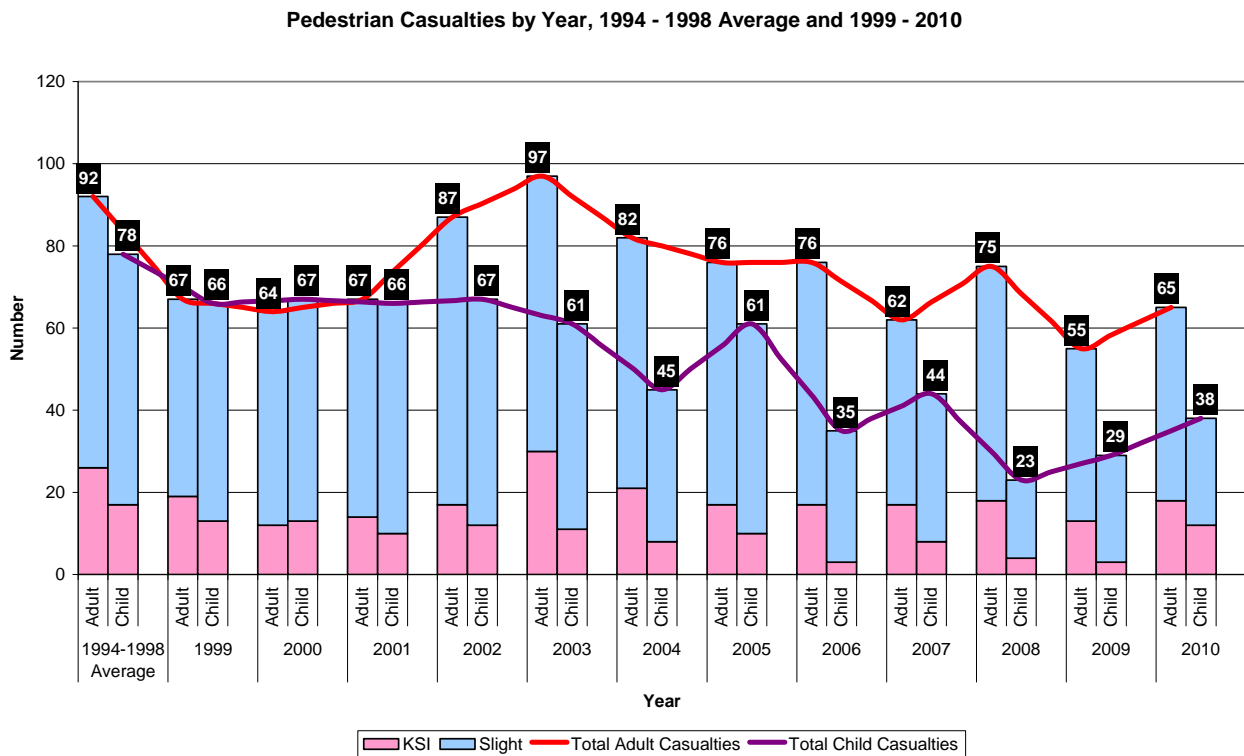
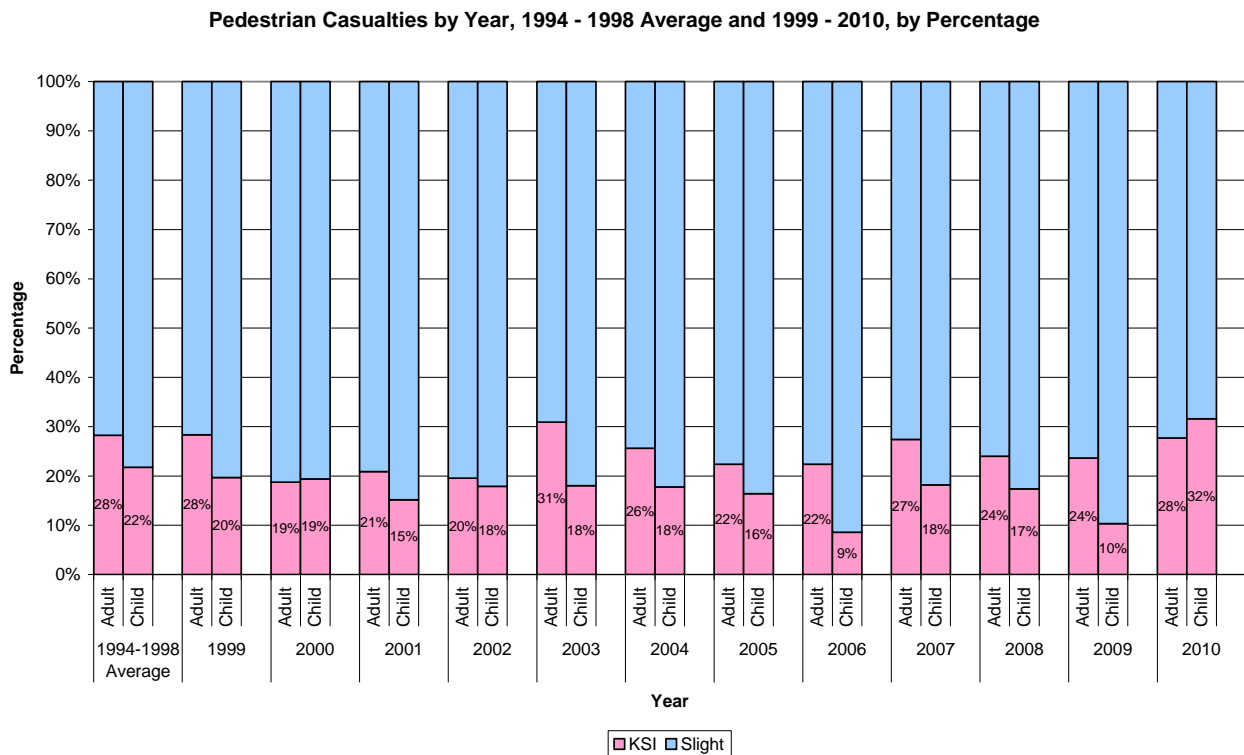


Figure 13: Severity of Adult and Child Pedestrian Casualties by Year, with KSI and slight casualties being displayed as percentages of total casualty numbers



During the year, both adult and child pedestrian casualties fluctuate from month to month. We can see that the number of adult pedestrian casualties peaks in September and October, while the number of child pedestrian casualties peaks over the Summer Holiday period of July and August, but remains high through to October. However, when looking at the severity of these casualties, it appears that April and December are proportionately the worst months for adult pedestrian casualties, when over a third of casualties are KSI, while for children this peak is in October, when almost 40% of casualties are KSI. For adult pedestrian casualties throughout the rest of the year both the numbers and severity of these casualties remain fairly consistent, but for child pedestrian casualties there is a definite increase in total numbers from December to July and then a decrease back to December, which is almost mirrored by the severity of the casualty (there were 0 KSI child casualties in December and January between 2006 and 2010). These different trends for adult and child pedestrian casualties is something that could be looked in to further, and should be taken into account when dealing with pedestrian casualty levels.

Figure 14: Severity of Adult and Child Pedestrian Casualties by Month

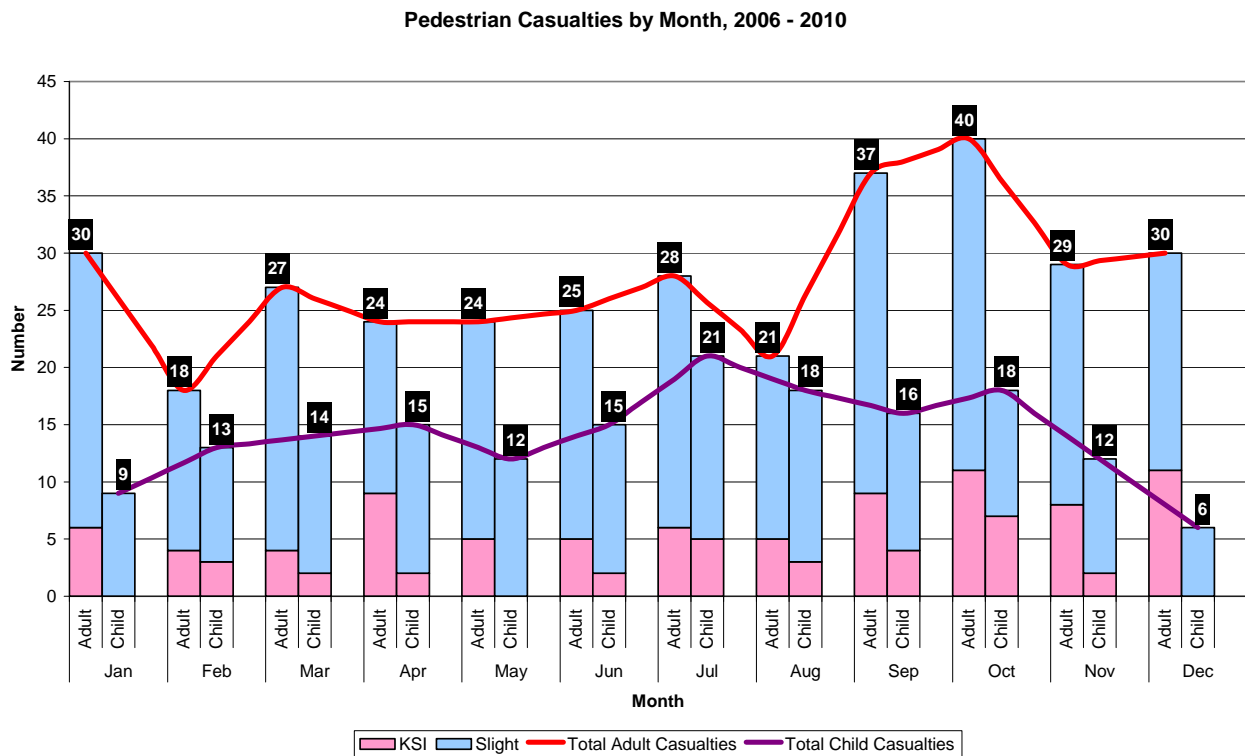
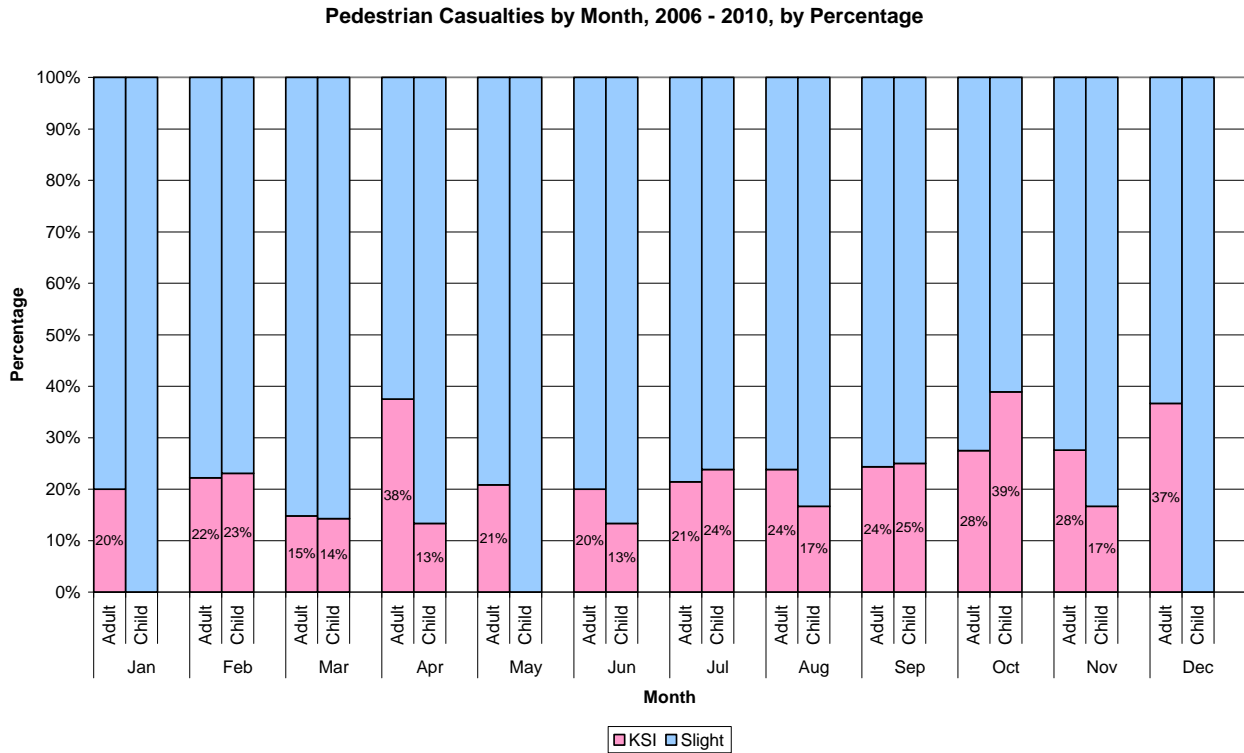


Figure 15: Severity of Adult and Child Pedestrian Casualties by Month, with KSI and slight casualties being displayed as percentages of total casualty numbers



While pedestrian casualty levels fluctuate day to day, from Figure 16 we can see that the casualty numbers build up through the working week to a peak on Friday, and then decline over the weekend. In terms of the severity of these casualties, child casualty rates tend to be fairly consistent throughout the week, with a slight peak on Tuesdays, however, this is not something that is mirrored in the adult casualty rates. While Tuesday is still the worst day for adult KSIs, there is then a drop of nearly 30% to KSIs on Wednesdays. The proportion of Adult KSIs then increases until Friday and remains fairly constant over the weekend, but then drops on Monday. The causes of this peak on in KSI casualties on a Tuesday may be something that should be looked in to further.

Figure 16: Severity of Adult and Child Pedestrian Casualties by Day

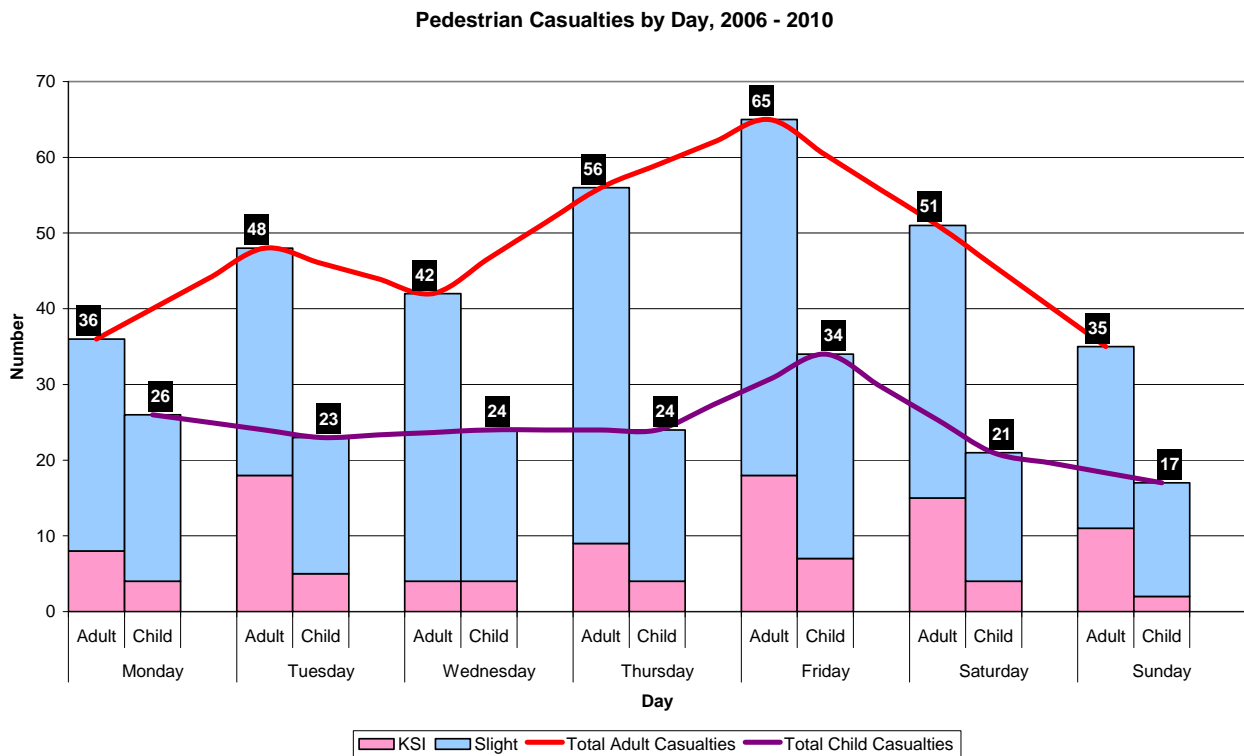
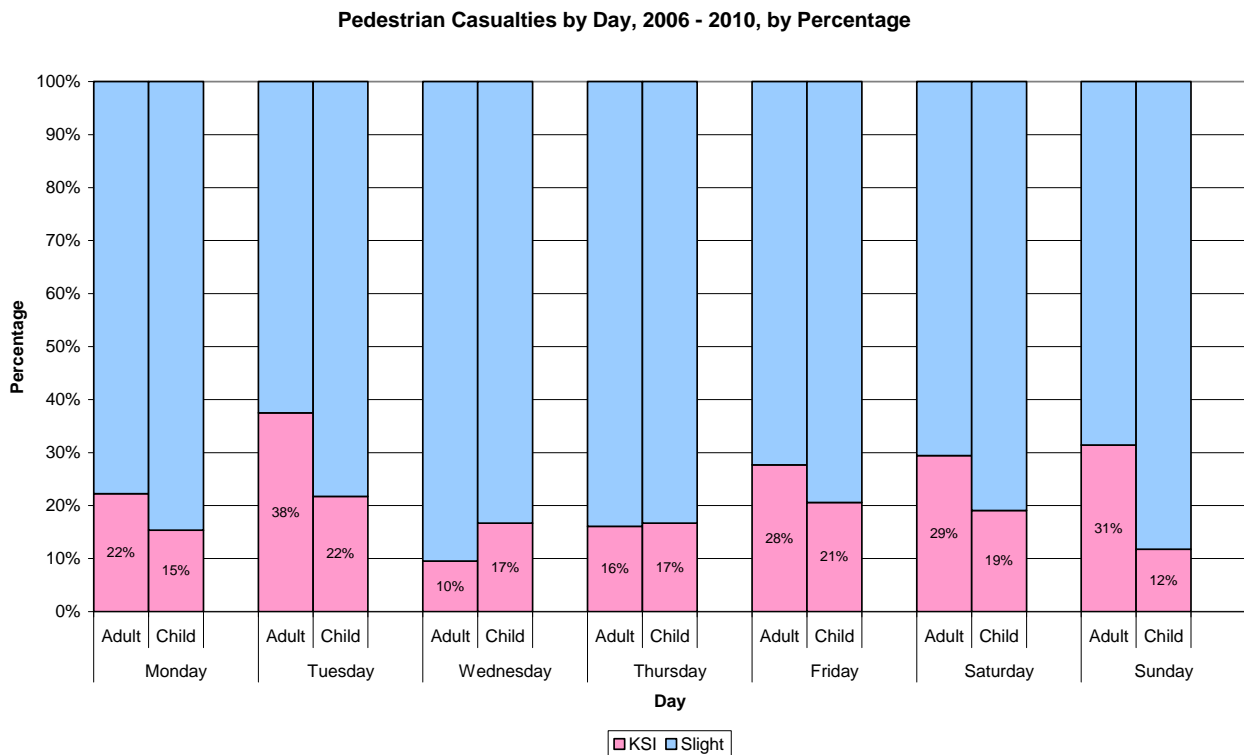
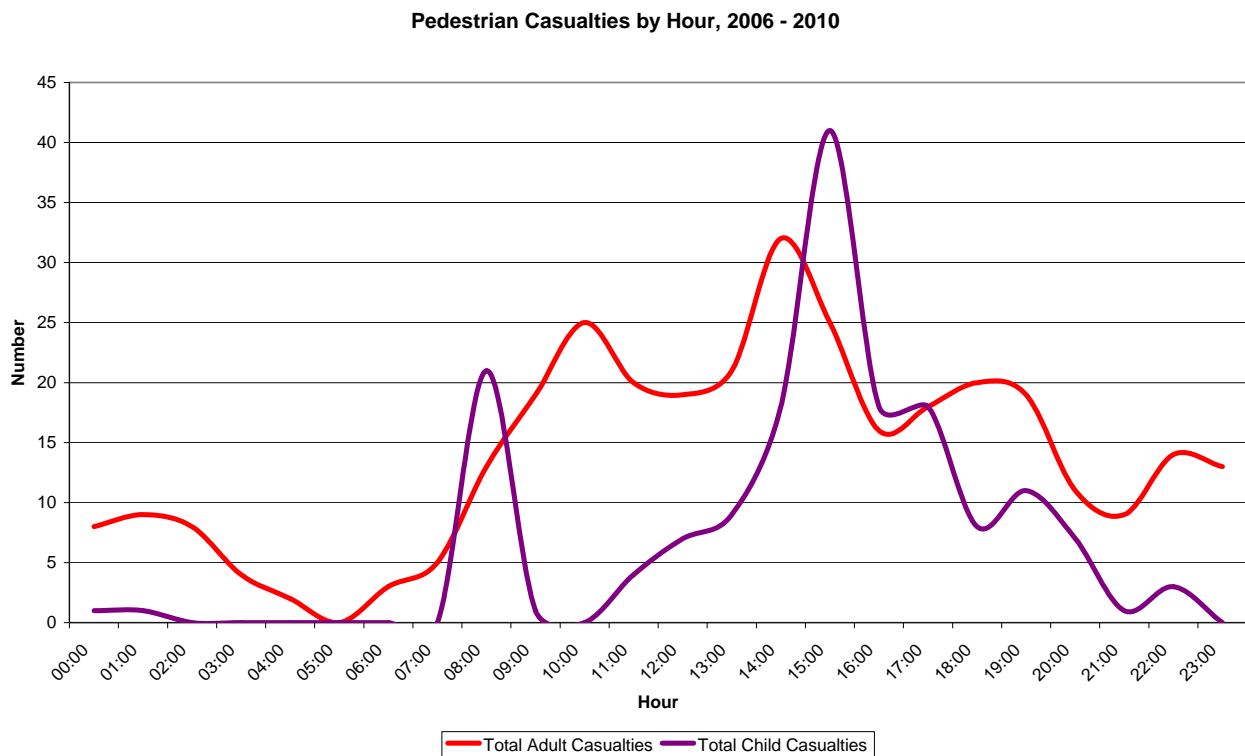


Figure 17: Severity of Adult and Child Pedestrian Casualties by Day, with KSI and slight casualties being displayed as percentages of total casualty numbers



As would be expected, there is a variation in both adult and child pedestrian casualty levels throughout the day. For child casualties, there are two peaks at around 08:00 and 15:00, which coincides with the start and end of the school day. The trend is not quite as obvious with adult pedestrian casualties, with a gradual increase in casualties in the morning, followed by a steady decline in the late afternoon, but with two small peaks in the early and late evening. The specific problem identified from this figure is child casualties around school opening and closing times, and while a large amount of work has already been done on this issue, these numbers show that there still remains a road safety concern around these times.

Figure 18: Total Adult and Child Pedestrian Casualties by Hour

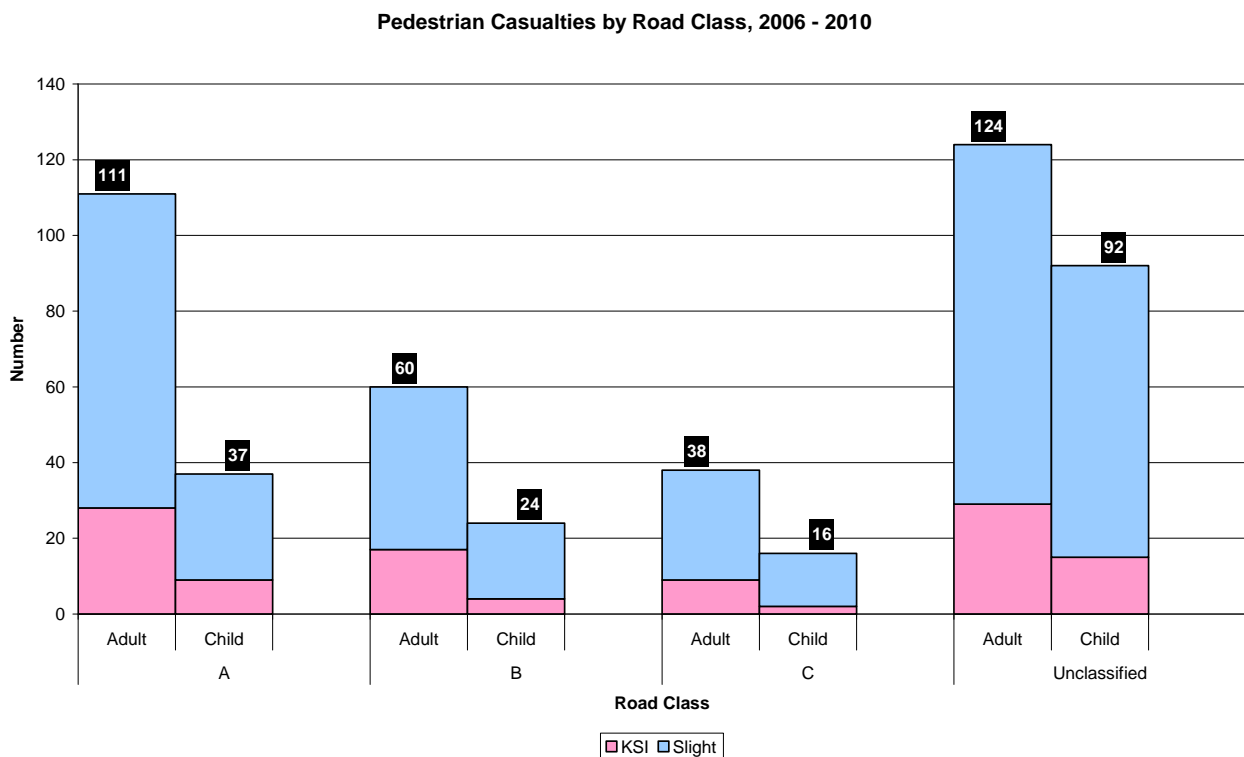


Analysis of road class shows the number of pedestrian casualties on different types of road in the Northumberland area. Figure 19 shows that 'Unclassified' roads have the highest levels of both adult and child pedestrian casualties. Over half of child pedestrians and a third of adult pedestrians are injured on these roads. These roads are a mixture of urban and rural, and make up around 47% of the road network in the Northumberland area.

This figure shows that there is a greater spread of adult pedestrian casualties over the different road types than that of child pedestrian casualties. This is to be expected as adult pedestrians are more likely to have greater freedom over the road network. Additionally, if we think about the types of roads that make up the 'Unclassified' class, it would seem logical to say that most of the child pedestrian casualties will have occurred on residential streets, and possibly close to the child's home. This is something that could be analysed further.

In terms of the proportion of KSI and slight casualties, there is no significant change between the road class and the percentage of KSIs on that road.

Figure 19: Severity of Adult and Child Pedestrian Casualties by Road Class



Pedal Cyclist Casualties in Northumberland

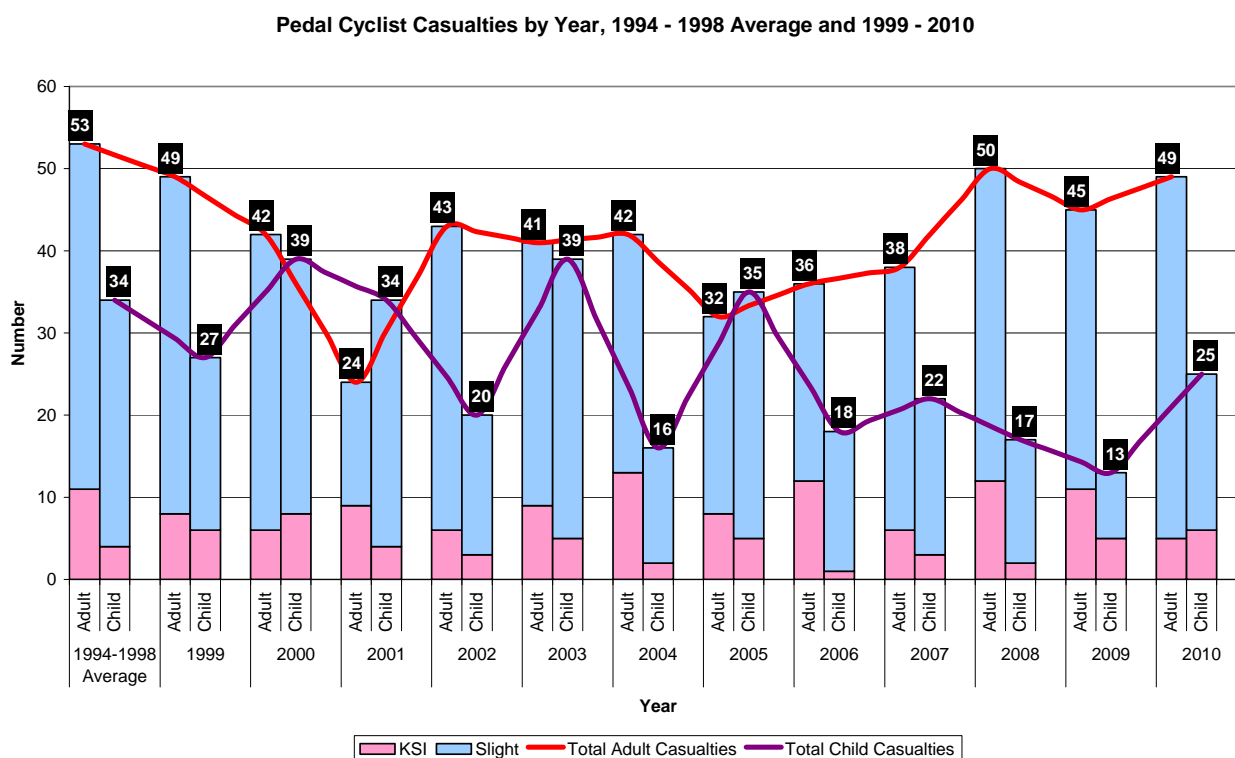
Pedal cyclists fall into the category of vulnerable road users. They have less protection, power, and speed compared to car drivers (who are the predominant road users in the region). As a result they can be more susceptible to severe injury in a road traffic collision.

Over the past 5 years pedal cyclist casualties have accounted for around 5% of all casualties in Northumberland. However, this figure rises to 7% when looking at the purely KSI casualties. These higher levels observed in the more severe classes of injury show how vulnerable cyclists are as a road user group.

Due to the nature of their respective daily activities, adult and child pedal cyclist casualties have slightly different trends and patterns. Therefore for the purposes of this report they will be analysed separately. 'Children' are taken to be all people under the age of 16.

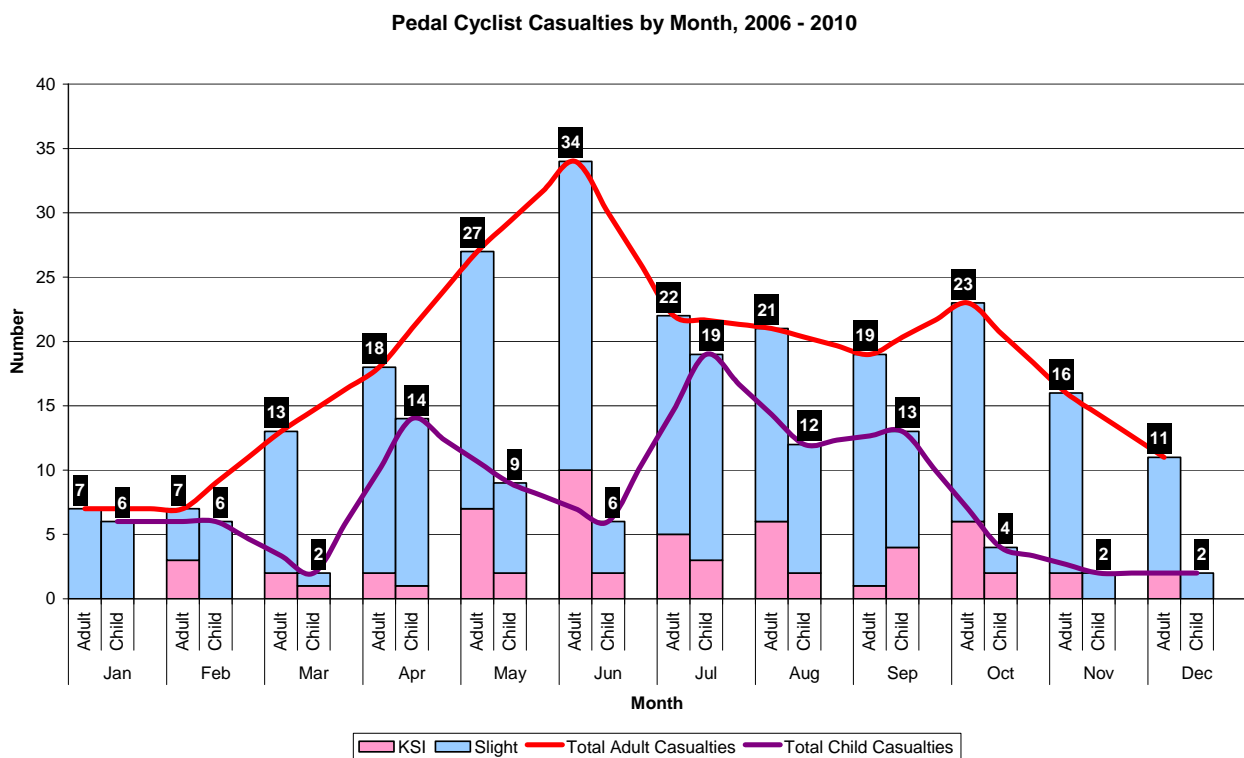
Figure 20 shows how the levels of adult and child pedal cyclist casualties have changed over the past 12 years compared to the 1994-98 baseline average. We can see that the trend in child casualties has been generally decreasing since 2003, however, in 2010 the number of child casualties increased again, though this would not be out of place when looking at the marked fluctuations on some of the casualty figures between other years. When looking at adult casualties, a different trend becomes apparent as unfortunately there seems to have been an increase in casualties over the last few years. This may be due to the recent sharp increase in fuel prices, which when coupled with the economic climate may have resulted in more adults cycling rather than driving, with a resulting increase in the numbers of casualties. Due to the low number of total casualties, the information that could have been gained from the inclusion on a 100% stacked clustered column graph for this data would be unreliable as low numbers are very susceptible to large fluctuations in percentage difference.

Figure 20: Severity of Adult and Child Pedal Cyclist Casualties by Year



During the year, both adult and child pedal cyclist casualties fluctuate from month to month. We can see that the number of adult pedal cyclist casualties peaks in June, while the number of child casualties peaks over the start of the Summer Holiday period in July. Again, a more in depth look at the proportion of KSIs to slight casualties would be unreliable given the low overall number of casualties. From this information, it would appear that casualties are generally increasing over the spring and summer when the weather is generally more clement and more cyclists are on the roads, although it is interesting to note that the month when there are the most adult casualties is also the month that child casualties are at a mid year low. When numbers are this low it is possible to look more closely into the individual causes of these casualties to try to identify if they are clustered around road safety black spots.

Figure 21: Severity of Adult and Child Pedal Cyclist Casualties by Month



Pedal cyclist casualty levels fluctuate day to day, however, from Figure 22 we can see that the casualty numbers for both adult and child pedal cyclists peaks on a Wednesday, with the lowest number of casualties being on a Friday. In terms of the severity of these casualties, it would seem that casualties that happen on the weekend are more severe than those that happen during the week. One suggestion for why this is could be that on the weekend people tend to cycle for recreational purposes on roads that they are not accustomed to, potentially leading to more severe casualties. The causes of this peak in KSI casualties on a Wednesday and in casualty severity on the weekend may be something that should be looked in to further.

Figure 22: Severity of Adult and Child Pedal Cyclist Casualties by Day

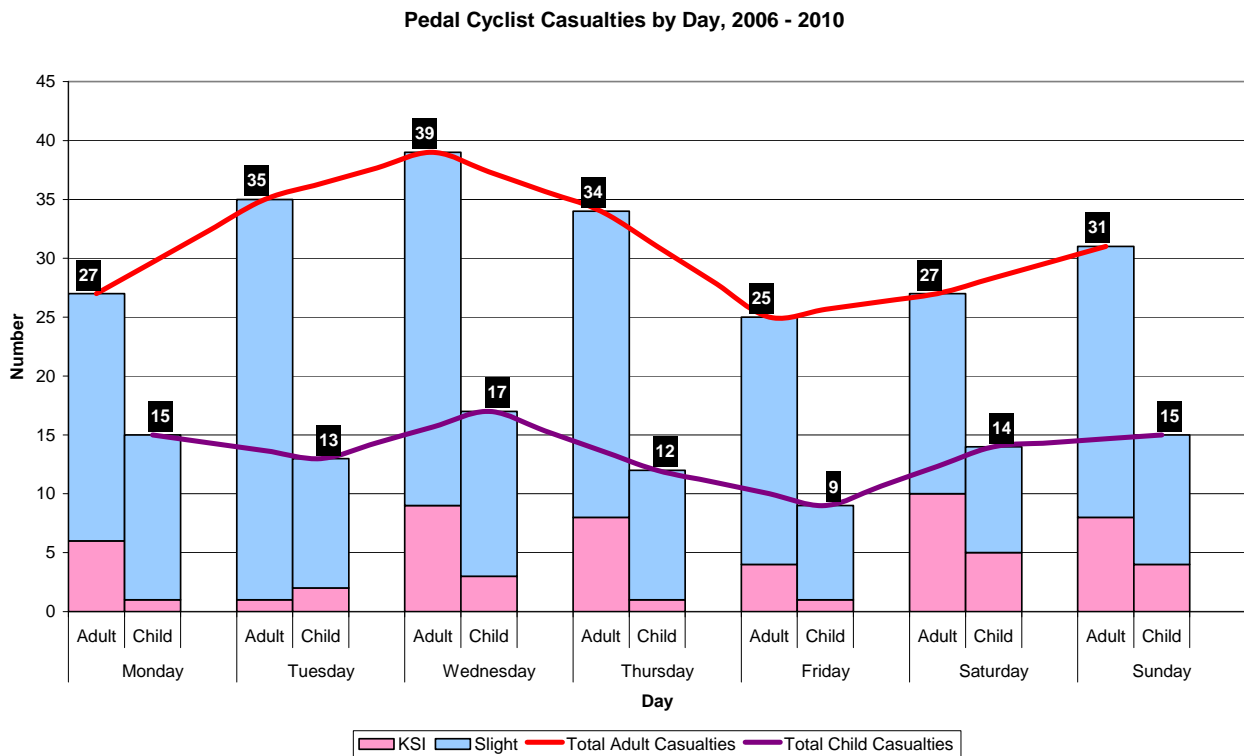
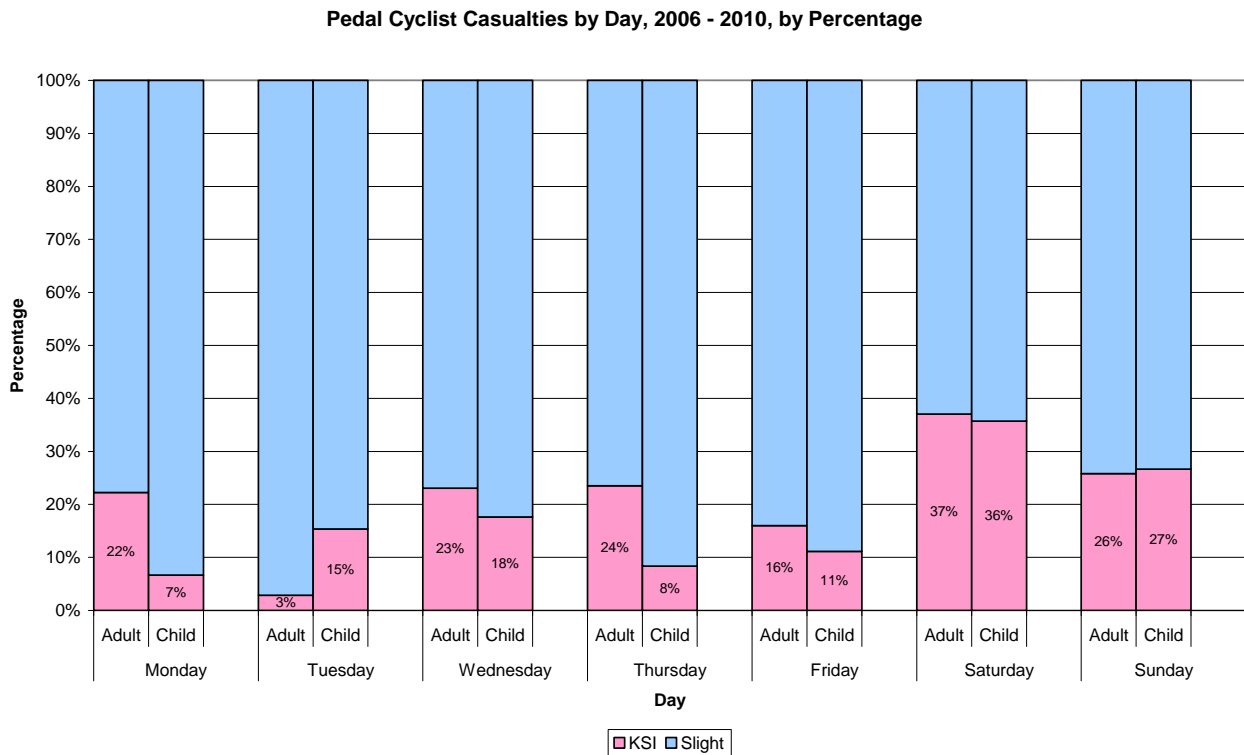


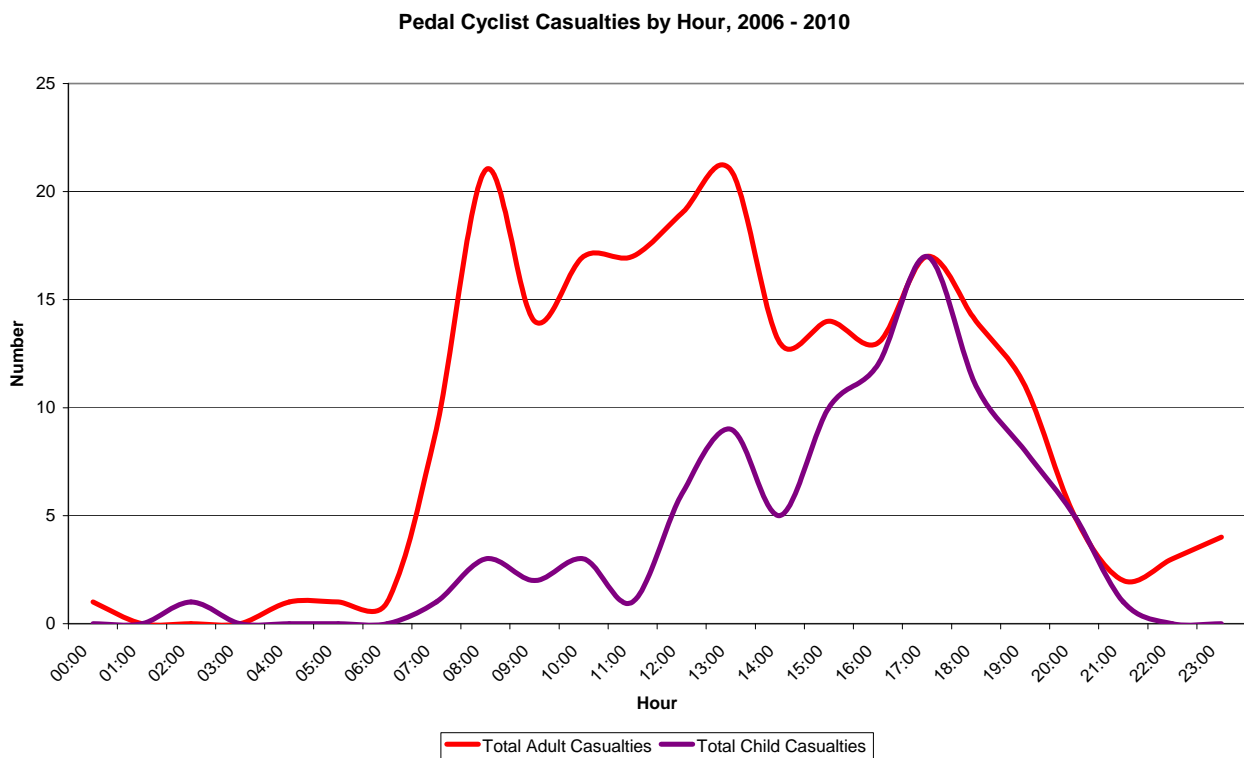
Figure 23: Severity of Adult and Child Pedal Cyclist Casualties by Day, with KSI and slight casualties being displayed as percentages of total casualty numbers



During the day, as with all road casualties, pedal cyclist casualties in the Northumberland area fluctuate on an hourly basis. Figure 24 shows how child and adult pedal cyclist casualties peak at different times of the day. This again proves how different their respective transport/journey patterns are.

The highest rates for adult pedal cyclist casualties can be observed between 08:00 and 18:00, during which times the number of casualties remains fairly consistent. However, there are still some fairly distinct peaks, which are probably linked to key commuting times at 08:00, 12:00 and 17:00. In contrast to this, child pedal cyclist casualties have a more marked peak leading up to 17:00 with a small spike at 13:00. This peak is too late in the day to be related to school commuting times and so is possibly related to leisure activities or out-of-school clubs. Coupled with the road class analysis, it would suggest that the majority of child pedal cyclists are injured whilst 'playing out' in the streets of Northumberland.

Figure 24: Total Adult and Child Pedal Cyclist Casualties by Hour

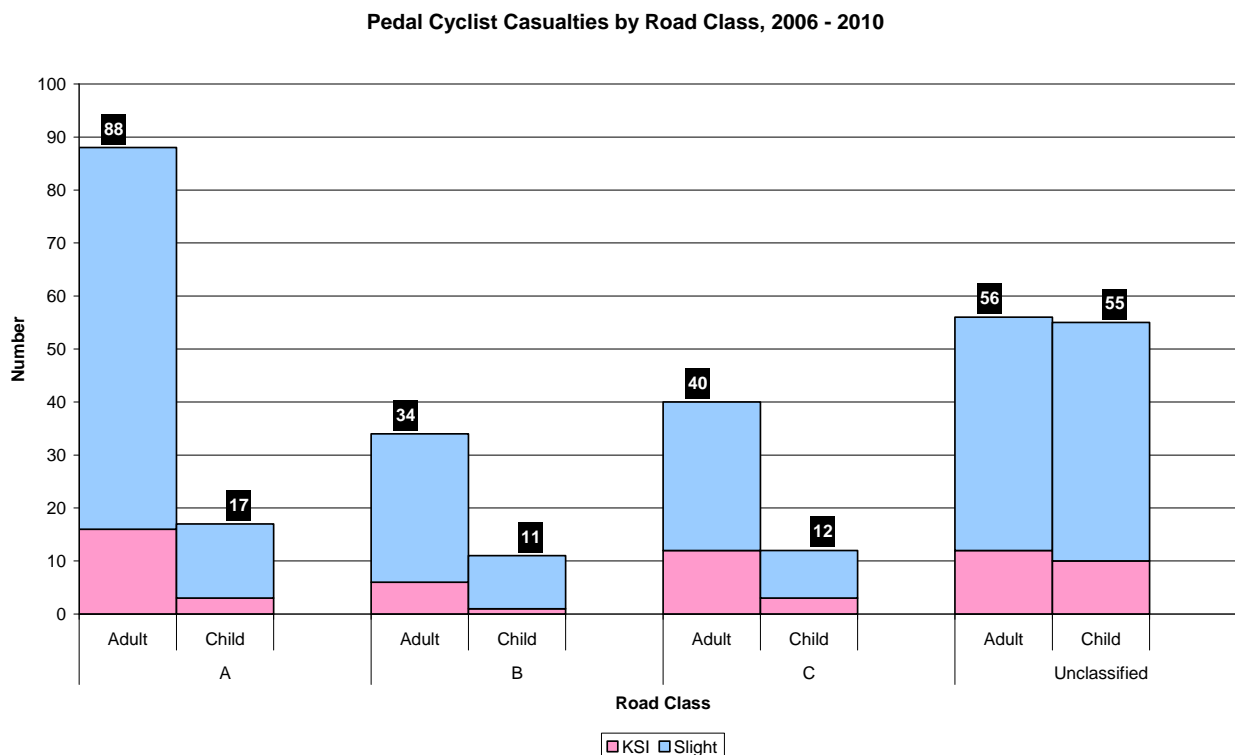


Analysis of road class shows the number of pedal cyclist casualties on different types of road in the Northumberland area. Figure 25 shows that 'Unclassified' roads have the highest levels of child pedal cyclist casualties, with over half of child pedal cyclist casualties occurring on these roads. This concentration can be read alongside the information in Figure 24 to suggest that the majority of child pedal cyclists are injured whilst 'playing out' in the streets of Northumberland.

This figure also shows that there is a greater spread of adult pedal cyclist casualties over the different road types than that of child pedal cyclist casualties, although the number of casualties on 'A' class roads is significantly higher than all other road classes. This is to be expected as adult pedal cyclists are more likely to have greater freedom over the road network, and the spread over all road classes would suggest that this group uses pedal cycles for both leisure and commuting purposes.

In terms of the proportion of KSI and slight casualties, there is no significant change between the road class and the percentage of KSIs on that road, although 'C' class roads make up the highest proportion of KSIs for both adults and children.

Figure 25: Severity of Adult and Child Pedal Cyclist Casualties by Road Class



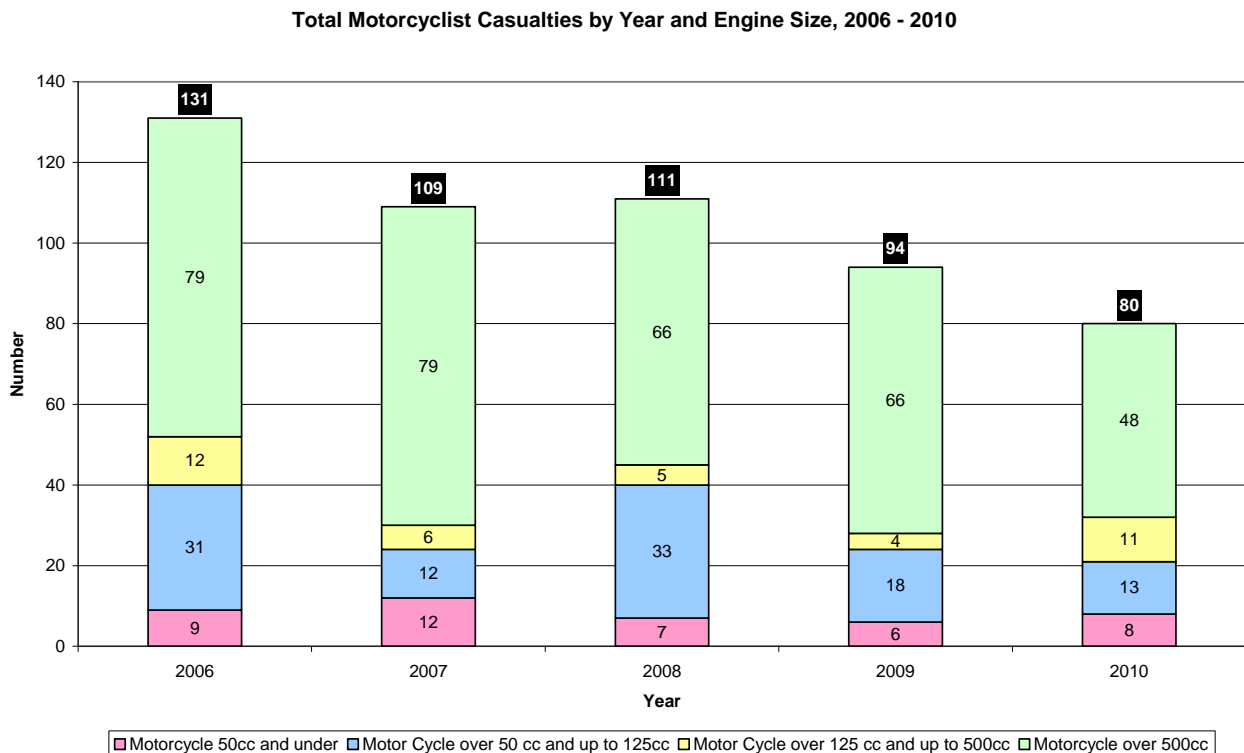
Motorcyclist Casualties in Northumberland

Unlike cars and other forms of transportation, Stats 19 splits motorcycles into four different vehicle categories dependent upon their engine size. These categories range from '50cc and under' to 'Over 500cc'. The split in motorcycle types is related to the power and technical specifications of different machines but also to the laws regarding motorcycle training and testing.

Over the past 5 years motorcycle casualties have accounted for around 8% of all casualties in Northumberland. However, this figure rises to 24% when looking at the purely KSI casualties. These higher levels observed in the more severe classes of injury show how vulnerable motorcyclists are as a road user group.

Figure 26 shows how motorcycle casualty levels have changed over the past 5 years in the Northumberland area. It is clear from this figure that there has been a definite downward trend in the number of motorcyclists being injured in collisions. We can also see that the main motorcycle casualty class of 'Over 500cc' has also been steadily reducing, although it still makes up the majority of casualties. The other categories do not show as much of a decline, but as their casualty numbers are low already, they are more susceptible to fluctuations year on year.

Figure 26: Total Motorcyclist Casualties by Year and Engine Size

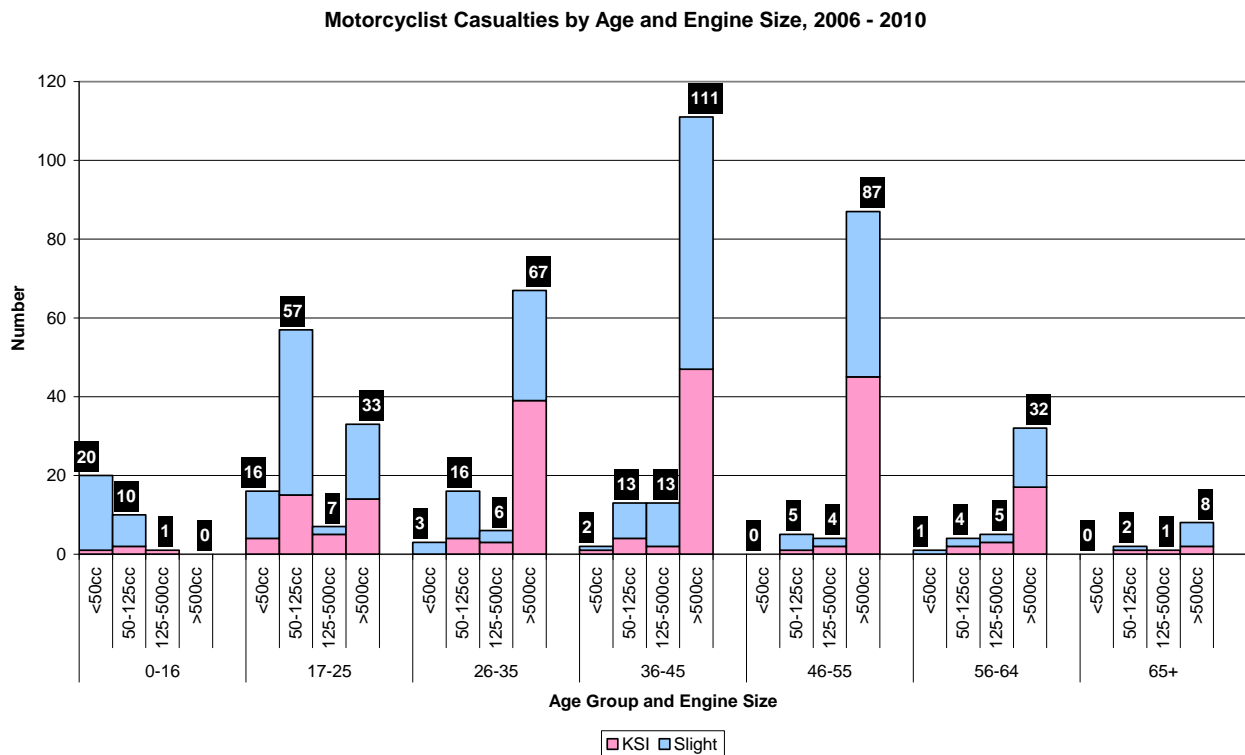


Motorcycle testing regulations mean that younger riders are more restricted in the engine size of motorcycle that they can ride. Figure 27 clearly shows how these restrictions affect the casualty levels of different age groups and different motorcycle sizes, as casualties on a motorcycle under 125cc where the rider was aged between 0 and 25 account for over two thirds of total motorcycle casualties and nearly two thirds of KSIs for these engine sizes in the Northumberland area.

By contrast to the young riders, casualties on motorcycles ridden by people aged over 25 are highest on the larger motorcycles, and mainly those over 500cc in engine size. These machines tend to be very powerful, often sporty, and ride with a high performance. These characteristics make them extremely popular with leisure riders. The age group with the highest number of casualties is the 36-45, the majority of which were on motorcycles of over 500cc. The large amount of casualties from this age group could be due to people of this age generally having more disposable income to buy a larger motorcycle, but perhaps not the experience that an older rider would have to keep it under control.

Due to the large number of casualties on motorcycles over 500cc compared with those under 500cc, for the remainder of this section (following Figure 27) motorcycle engine sizes that are under 500cc will be grouped together.

Figure 27: Severity of Motorcyclist Casualties by Age Group and Engine Size



From Figure 28 we can see that during the year there is a six month period over the summer when the number of casualties on a motorcycle with an engine size of over 500cc increases dramatically. Coupled with this, we can also see from Figure 29 that the proportion of KSI casualties also increases over most of these months, peaking at 61% of all casualties in August being KSI. For the other six months of the year however, the number of casualties on these motorcycles reduces significantly, dropping below the number of casualties on the other sizes of motorcycle for five of those months. For those motorcycles under 500cc, the number of casualties remains much more consistent, although there are slight peaks in May-June and November. Also, the proportion of casualties that are KSI is much steadier than for larger motorcycles, the only notable peak being in June where just under 50% of casualties were KSI.

What this would seem to suggest is that motorcycles of over 500cc are ridden primarily for leisure, while motorcycles under 500cc are ridden for normal day to day use. It would therefore seem appropriate to focus resources on the larger motorcycles through the summer months only, with smaller vehicles being targeted all year round, but especially in the winter.

Figure 28: Severity of Under and Over 500cc Motorcyclist Casualties by Month

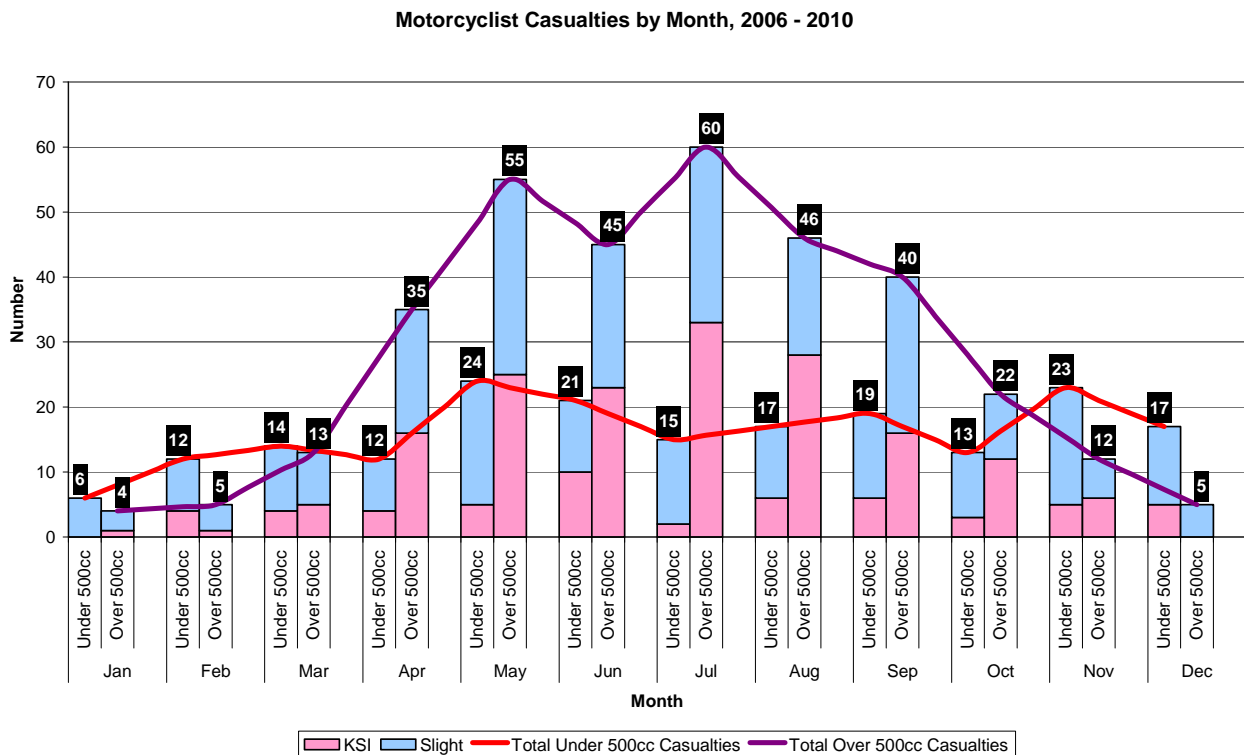
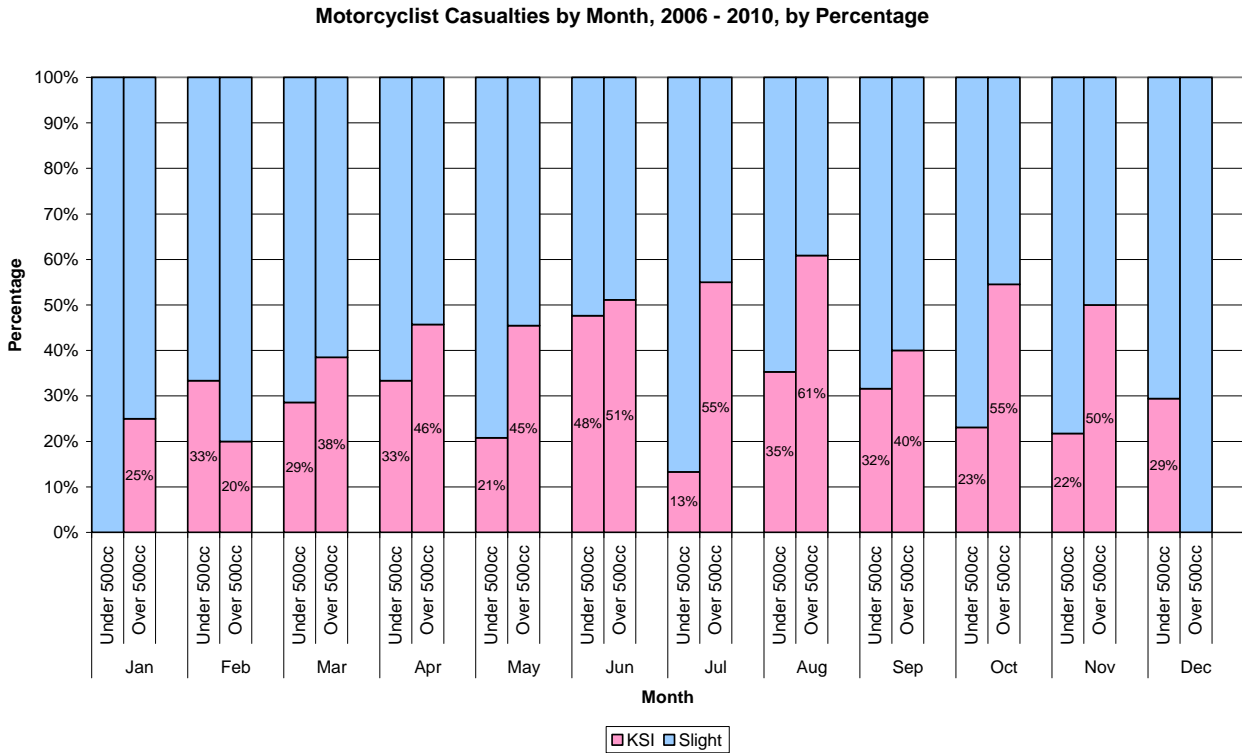


Figure 29: Severity of Under and Over 500cc Motorcyclist Casualties by Month, with KSI and slight casualties being displayed as percentages of total casualty numbers



The statistics demonstrated in Figure 30 support the findings in Figure 28 that motorcycles of under 500cc are ridden for day to day use, while those that are over 500cc are used for recreational riding. This conclusion can be drawn because the number of casualties on motorcycles under 500cc remains fairly constant throughout the week, while casualties on larger motorcycles increase dramatically over the weekend. Interestingly, the proportion of these casualties that are KSI remains fairly constant throughout the week for both engine size groups, with only a slight increase on Sundays.

Figure 30: Severity of Under and Over 500cc Motorcyclist Casualties by Day

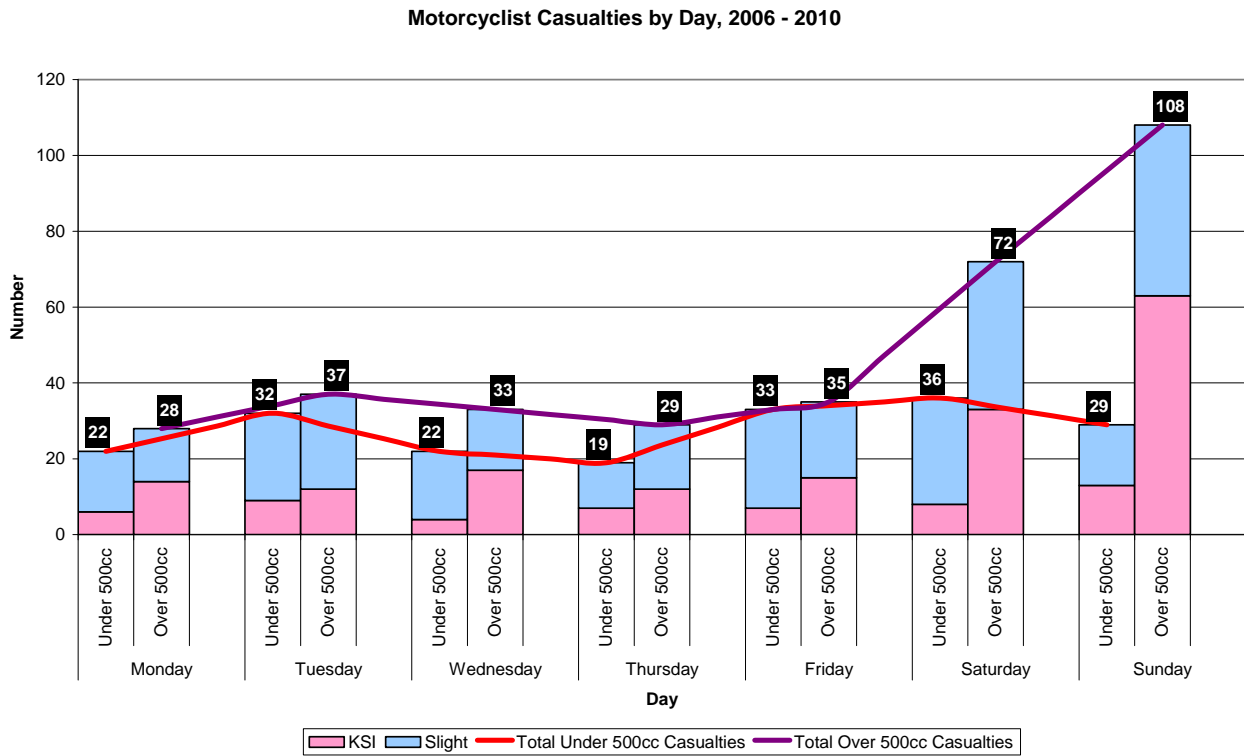
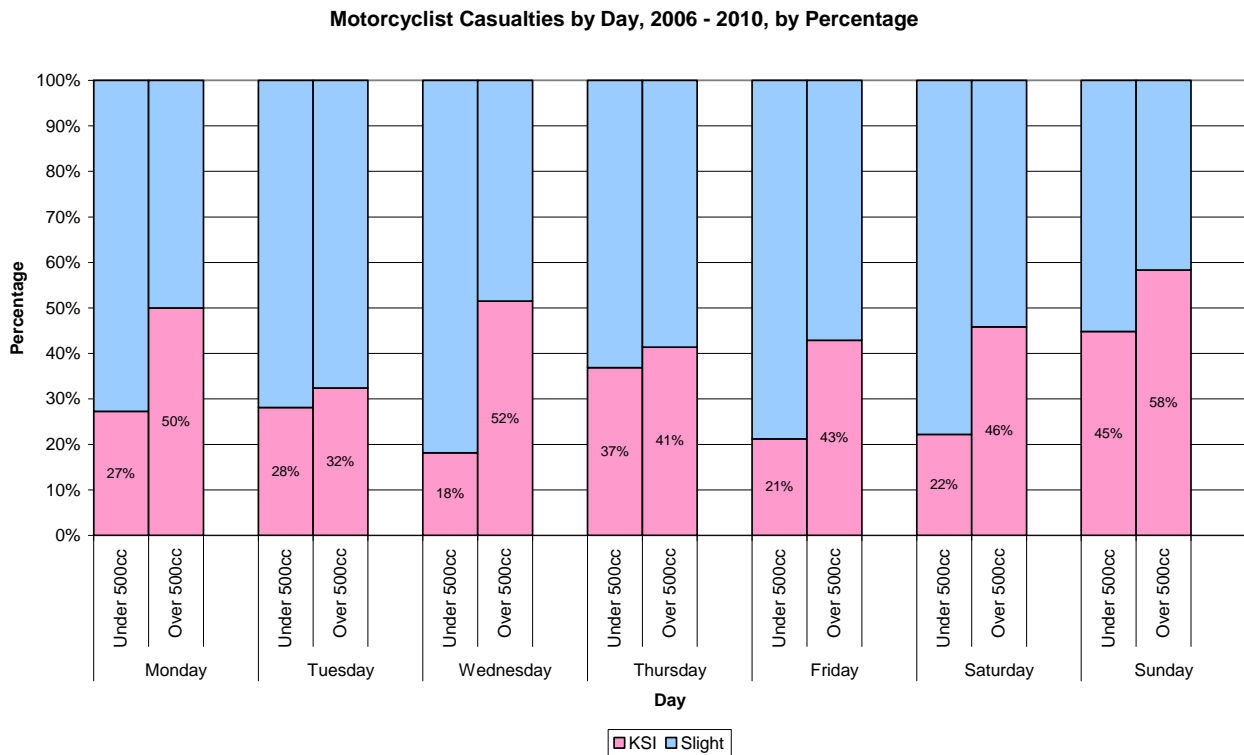
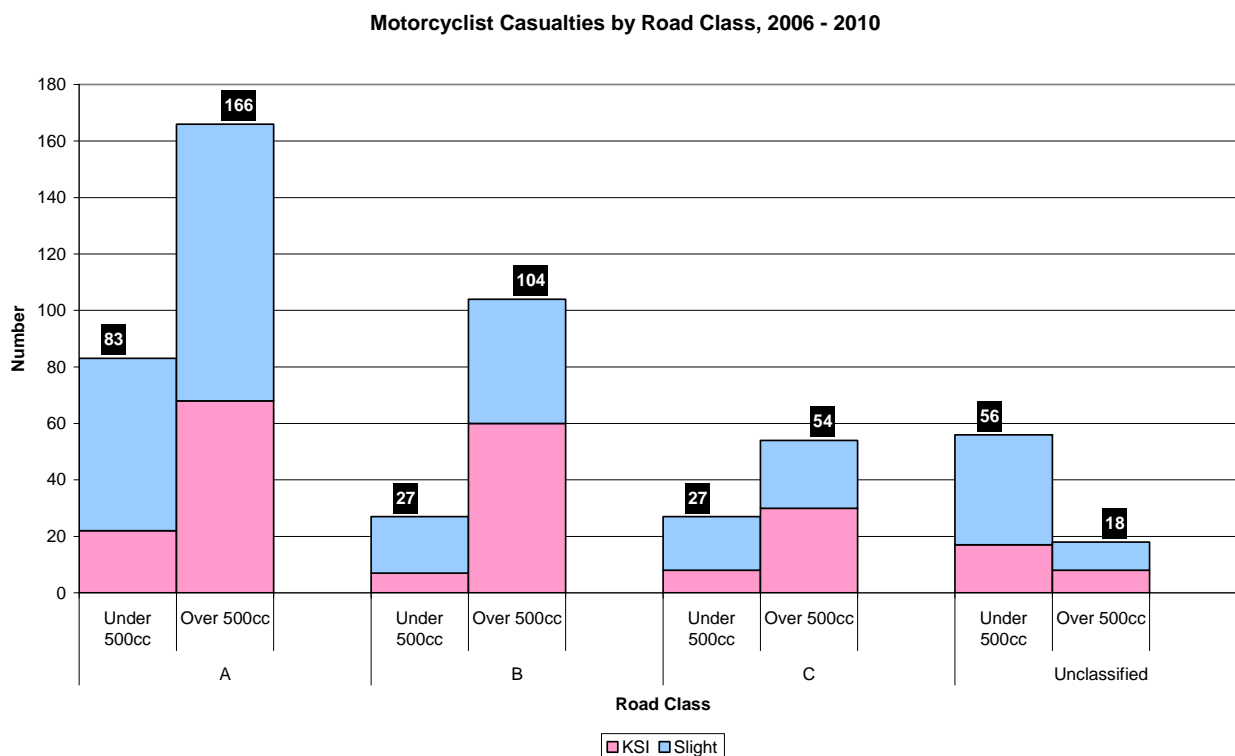


Figure 31: Severity of Under and Over 500cc Motorcyclist Casualties by Day, with KSI and slight casualties being displayed as percentages of total casualty numbers



Analysis of motorcycle casualties in relation to the Northumberland road network shows different trends for the smaller and larger motorcycle types. The over 500cc motorcycle casualties are highest on the principal rural routes; these are roads generally classed 'A' or 'B' with National speed limit restrictions. This coincides with the most popular routes used by leisure riders in Northumberland. By contrast, under 500cc motorcycle casualties are highest on 'A' class and 'Unclassified' urban roads. This follows previous theories that smaller motorcycles are used for commuting purposes and as the primary mode of transportation amongst some 16-25 year olds. The proportion of casualties that are KSI remains fairly constant on all road types, although it is slightly lower on 'A' class roads.

Figure 32: Severity of Under and Over 500cc Motorcyclist Casualties by Road Class



The analysis on the speed limit of the road where the casualty occurred also confirms the ideas expressed for Figure 30 that the majority of casualties on motorcycles over 500cc occur on principal rural roads where the speed limit is 60mph. In terms of the proportion of KSIs, the majority of casualties on 60mph roads on these larger bikes do end up as a KSI casualty. However, this may not be solely due to the speed of the bike, as this proportion drops to under a quarter of casualties being KSI on 70mph roads. For motorcycles under 500cc, the majority of casualties occur on 30mph urban roads (although there are still a significant minority that happen on the 60mph rural roads as well), and those casualties are fairly consistent in their severity.

Figure 33: Severity of Under and Over 500cc Motorcyclist Casualties by Speed Limit

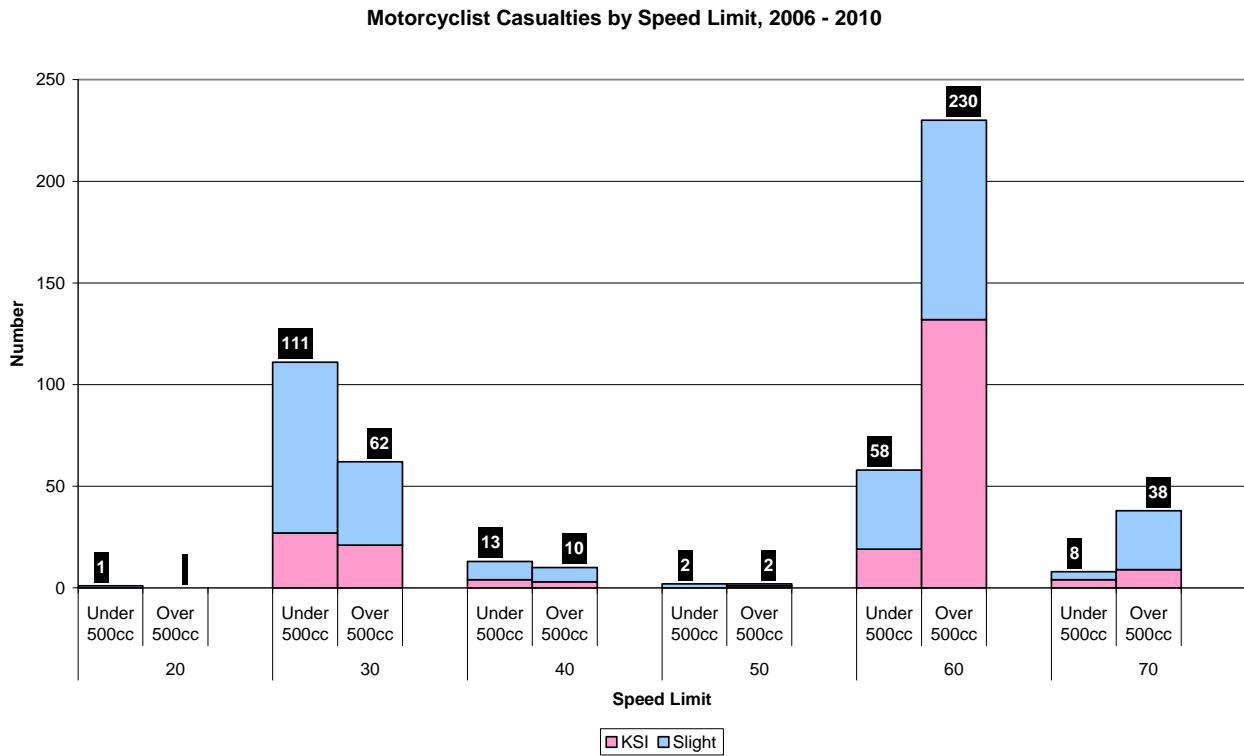
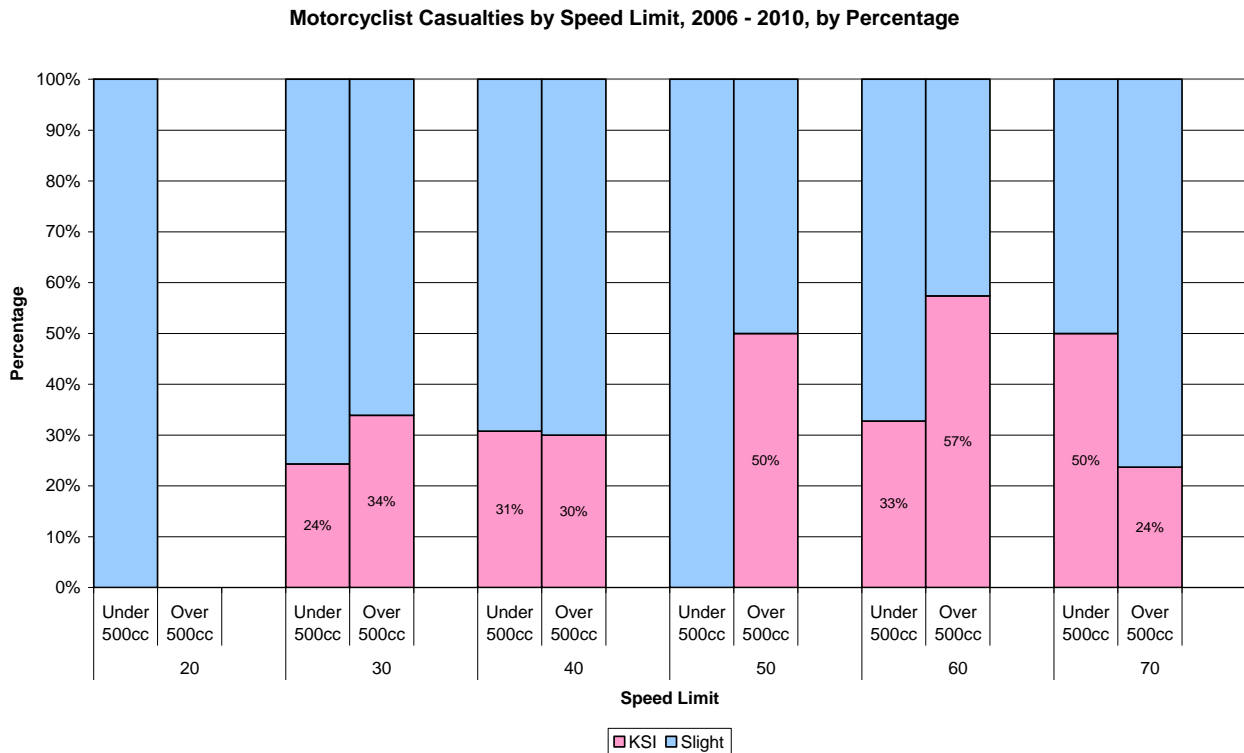


Figure 34: Severity of Under and Over 500cc Motorcyclist Casualties by Speed Limit, with KSI and slight casualties being displayed as percentages of total casualty numbers



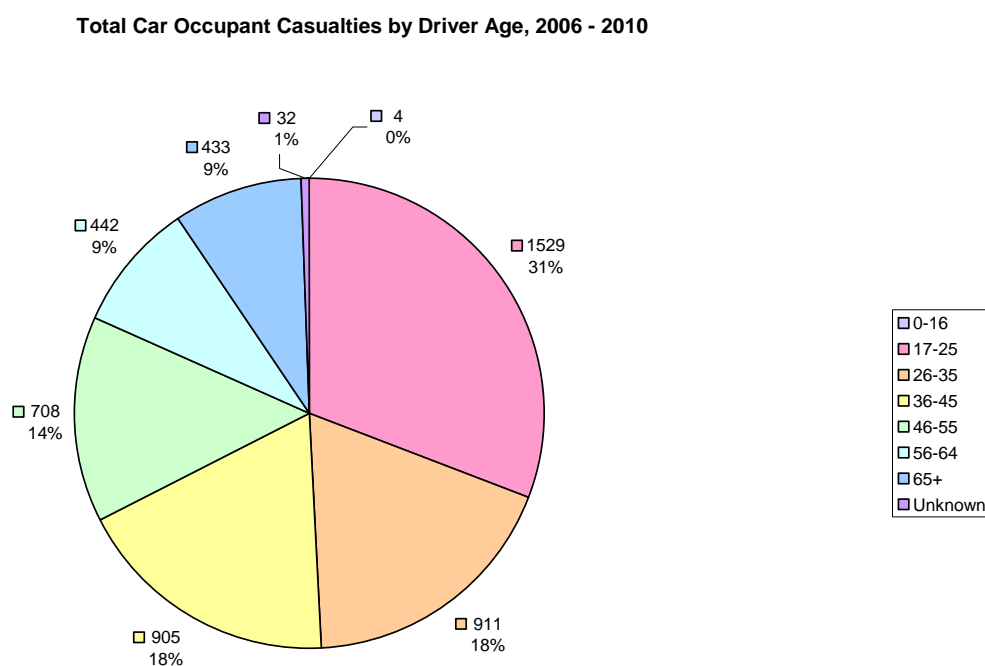
Car Occupant Casualties in Northumberland

Between 2006 and 2010, there have been a total of 6,936 casualties on Northumberland's roads. Of these casualties, 4,964 (71%) were amongst car occupants (driver and passenger). Therefore, when any work is done on Road Safety in Northumberland, the fact that the vast majority of casualties happen to car occupants must not be overlooked.

Figure 35 demonstrates the proportion of casualties amongst car occupants by the age of the driver of the car. Breaking this overall figure down into age groups provides a more detailed picture of the problem, and the most at-risk groups.

Figure 35 shows us that almost a third of all casualties occur in a car that is driven by a 17-25 year old (young driver). In terms of driving licence holdings, young drivers account for around 9.5% in the four postcode areas that make up Northumberland (although please note that these postcodes span several local authority areas).^{1, 2} This shows that casualties in cars driven by young drivers are proportionally much higher than they statistically should be given the number of young people who hold a driving licence.

Figure 35: Total Casualties amongst Car Occupants by Driver Age Group



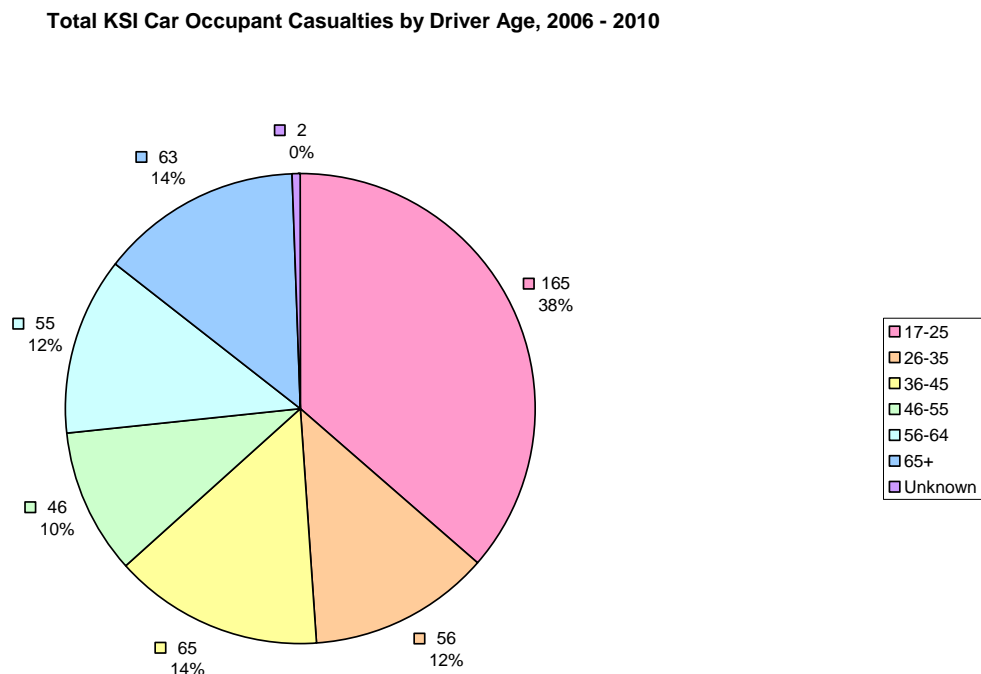
¹ The information on driving licence holdings by age and region/partial post code was obtained from a freedom of information request that was published by the Driver and Vehicle Licensing Agency (DVLA) on 10 November 2010. It can be found on the DVLA website at the following internet address:

<http://www.dft.gov.uk/dvla/foi/Disclosure/Driver%20Licence%20Statistics.aspx>

² The four post code areas that make up Northumberland are CA, DH, NE and TD.

Furthermore, in terms of the severity of casualty, young drivers are even more likely to have a KSI casualty within their car than other age groups, with nearly 40% of casualties in a car driven by a young driver being KSI.

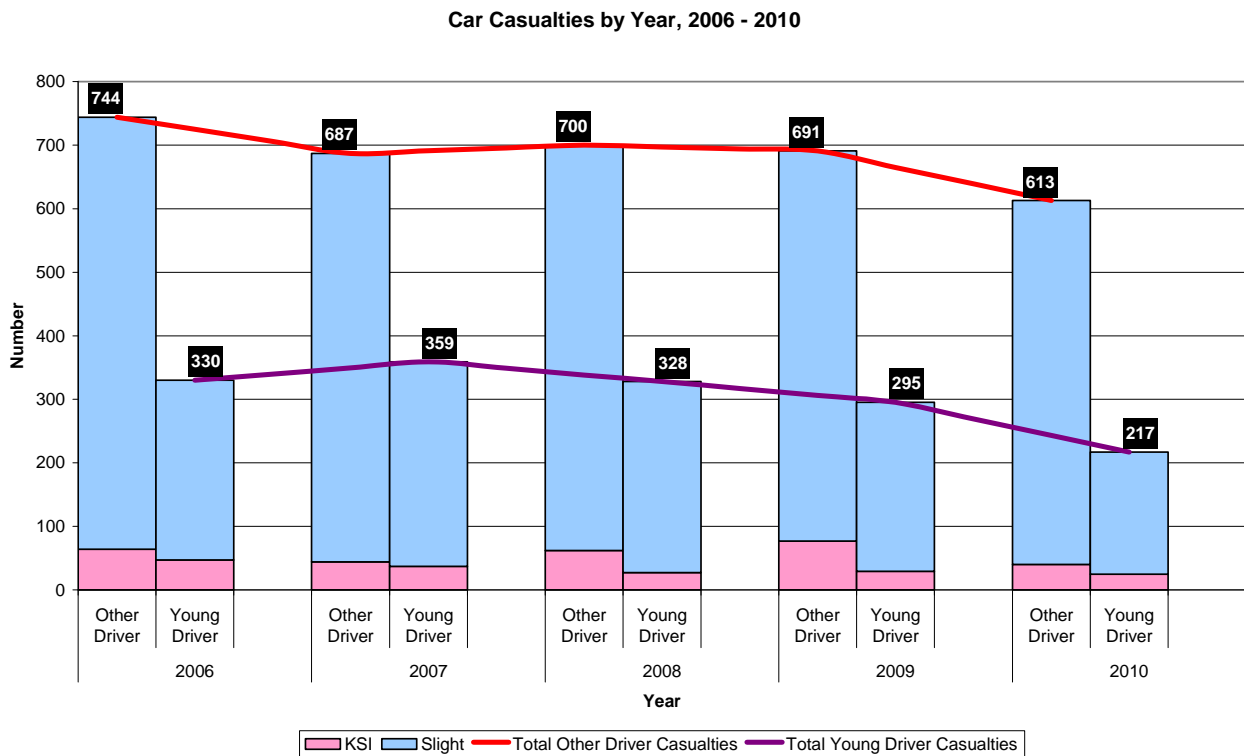
Figure 36: KSI Casualties amongst Car Occupants by Driver Age Group



This is a significant over representation in the casualty figures and shows there is clearly an underlying problem somewhere with this age group. The next set of graphs will focus on the distinction between young drivers and other drivers to try to identify specific areas that should be targeted. The term ‘Other Drivers’ has been used because 0-16 year olds and drivers of an unknown age are also included in this number along with drivers who are over 25.

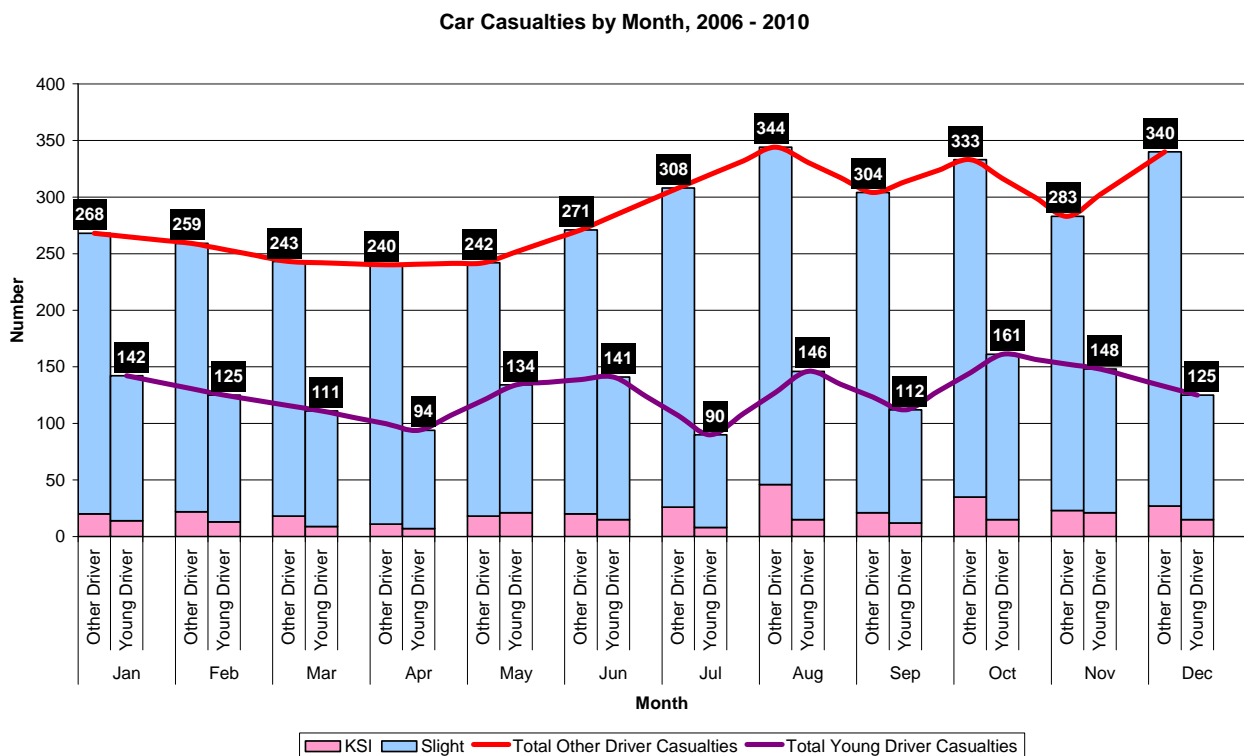
Figure 37 shows how casualty rates amongst car occupants have changed over the last five years. We can see from this that the numbers of casualties in cars driven by both young and other drivers have both been falling over the period, and related to this, the severity of those casualties has remained fairly stable at around 11% KSI for young drivers and 8% for others.

Figure 37: Casualty Severity in Cars Driven by Young and Other Drivers by Year



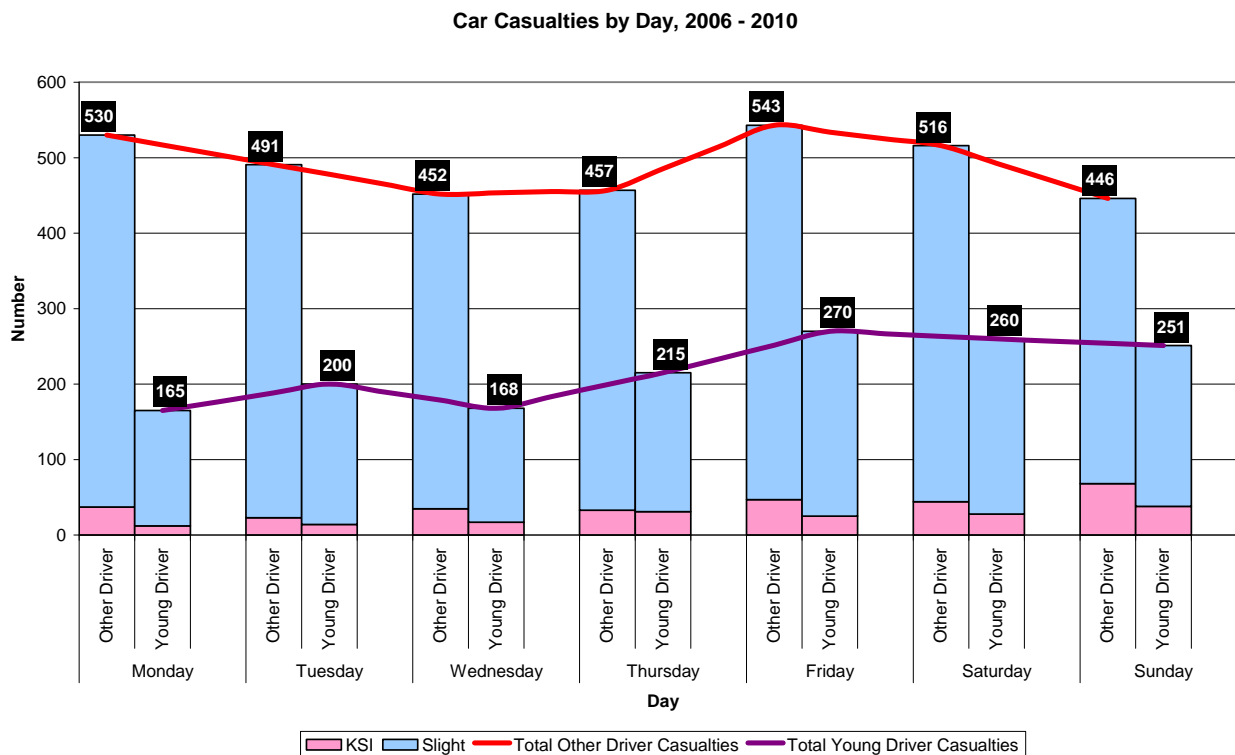
When looking at casualties by month, it is interesting to note that there is no significant fluctuation in casualties in cars driven by young drivers, although there is a slight dip in July. However, with other drivers, the number of casualties appears to rise throughout the year, peaking in August and then remaining high until December.

Figure 38: Casualty Severity in Cars Driven by Young and Other Drivers by Month



Similar to the trends observed for other road user groups, casualties in cars driven by young and other drivers differ through the week. The main difference between these two groups of drivers is that the most casualties occur over the weekend for young drivers (Friday, Saturday and Sunday), whereas, for other drivers it is on Mondays and Fridays that the most casualties occur.

Figure 39: Casualty Severity in Cars Driven by Young and Other Drivers by Day

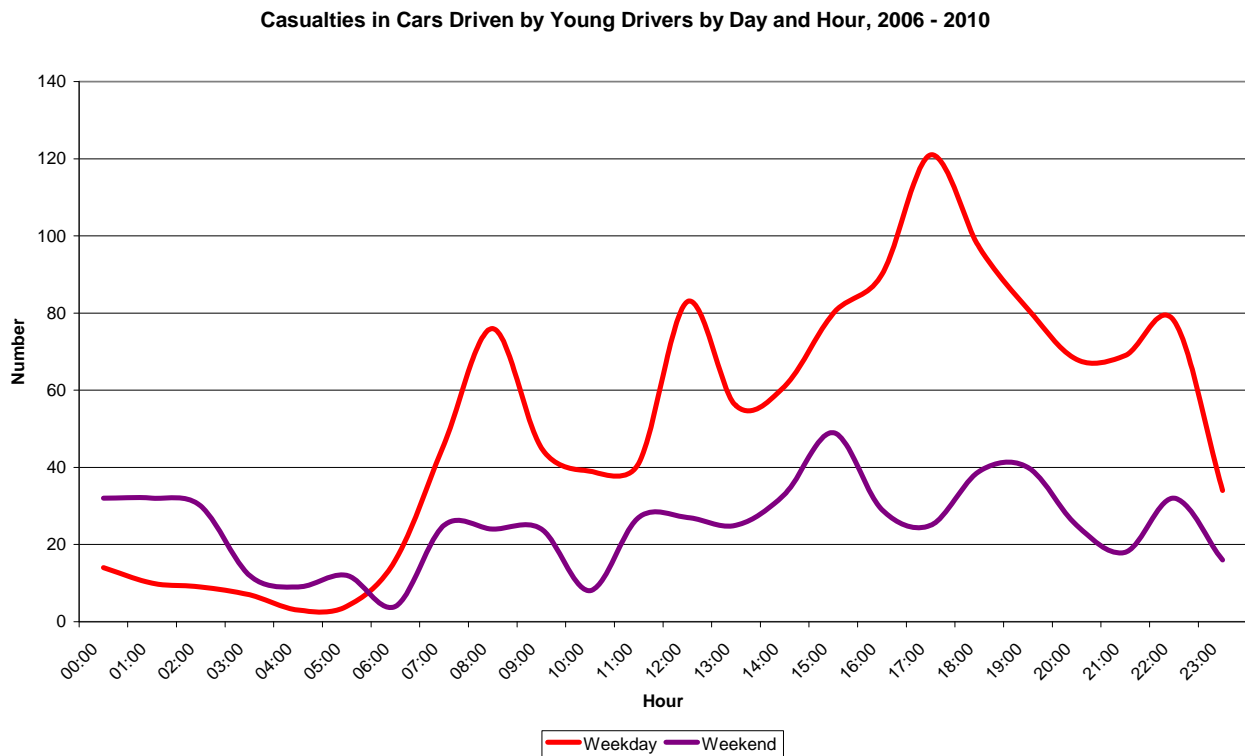


Looking in more detail at the hours in which young drivers get involved in a collision that results in a casualty in their car, we can see some definite trends when comparing weekday casualties (Monday-Friday) to those that happened on the weekend (Saturday and Sunday). This may help road safety practitioners to identify the travel patterns of young drivers.

During the week, young driver collisions peak at key commuting times (08:00, 12:00 and 17:00), with the afternoon peak the highest throughout the whole day. These periods of the day normally have the highest traffic flows on the road network and match the casualty peaks for other drivers. However, a slight departure from this is the peak that occurs for young drivers at 23:00 that is not matched by the other driver group.

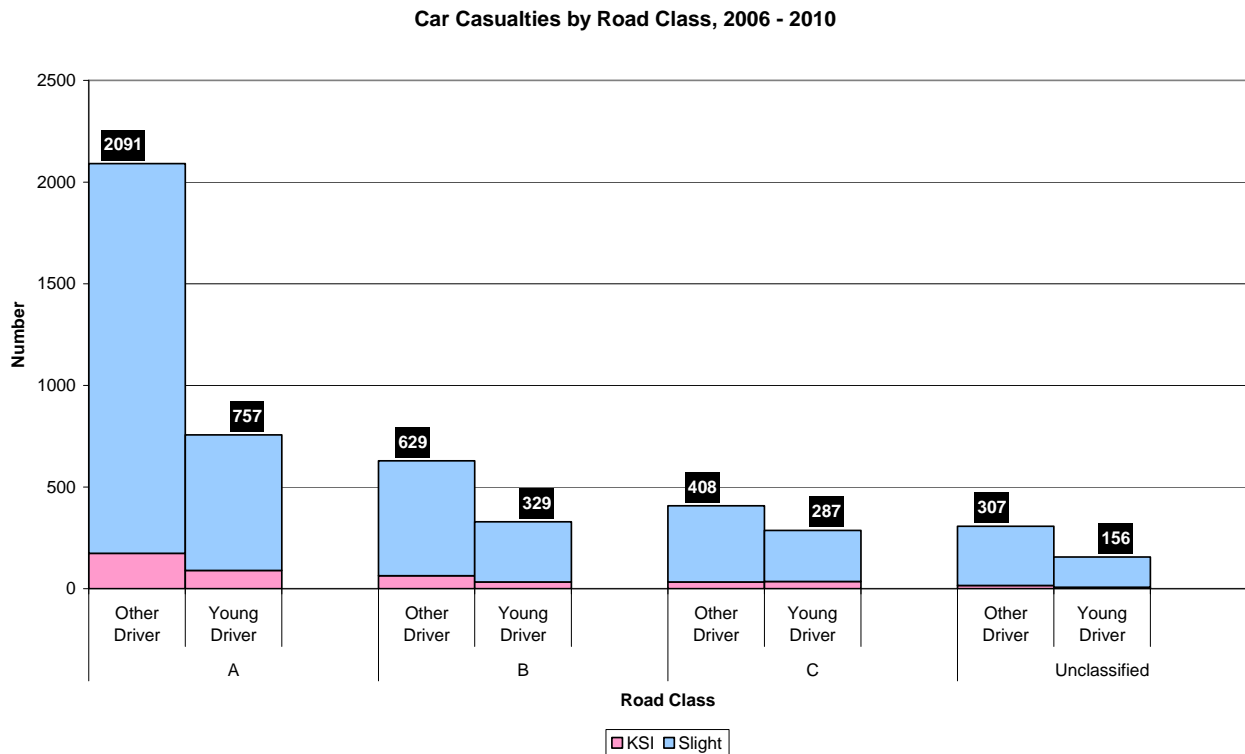
At the weekend the trend for young drivers is slightly different. Collisions peak at around 15:00 and there is a definite emphasis on casualties occurring in the late afternoon and evening. Interestingly the collision levels at a weekend also remain significant late into the night and into the following morning (particularly at around 01:00). This should help road safety practitioners to understand the travel patterns of young drivers throughout the day.

Figure 40: Total Casualties in Cars Driven by Young Drivers by Day and Hour



From looking at Figure 41 we can see that both young drivers and other drivers are involved in the most collisions on 'A' class roads, although as a proportion we can also see that young drivers are involved in more collisions on the other road classes than other drivers. Casualties in cars driven by young drivers make up around 27% of all casualties on 'A' class roads, whereas this proportion increases to 34% on 'B' and 'Unclassified' roads and 41% on 'C' class roads. This could imply that other drivers tend to use 'A' roads more than young drivers, or that they are more accustomed to using the smaller road classes, and so drive relatively safer. However, what must not be overlooked is that the vast majority of all car casualties happen on 'A' roads, both for young and other drivers.

Figure 41: Casualty Severity in Cars Driven by Young and Other Drivers by Road Class



From analysing the information on casualties by the speed limit of the road, we can see that there are a very large amount of casualties happening on the 60mph rural roads in Northumberland. Also as a proportion, the casualties that result from collisions on these roads have the highest ratio of KSIs to slight casualties (if we discount the figure for 50mph roads where the population size is very small and is therefore easily skewed). This would imply that driving on these rural roads is an issue for both young and other drivers. As a proportion, the number of casualties in cars driven by young drivers roughly matches that of other drivers at each speed limit, although the KSI to slight casualty ratio is greater for young drivers at each speed limit too. This shows that young drivers are more susceptible to more severe accidents than other drivers, although it must be noted that it is still other drivers that get involved in more collisions and whose cars contain the highest number of KSI casualties.

Figure 42: Casualty Severity in Cars Driven by Young and Other Drivers by Speed Limit

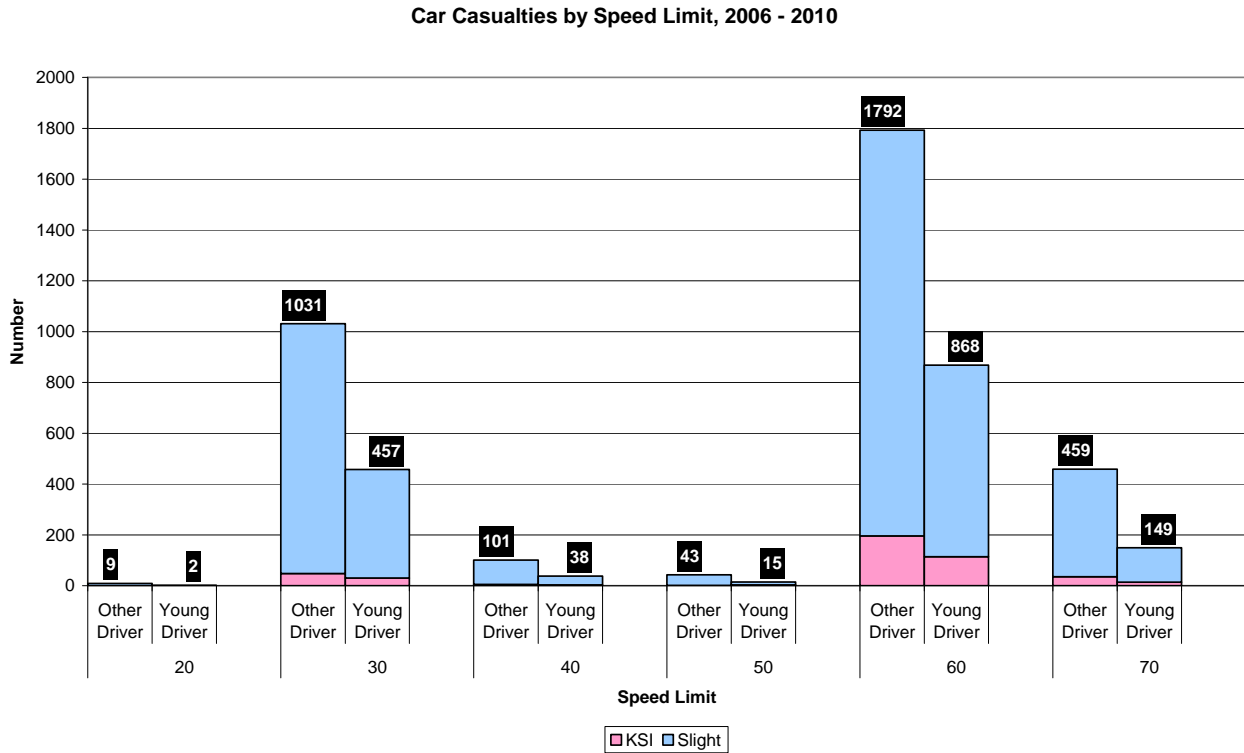
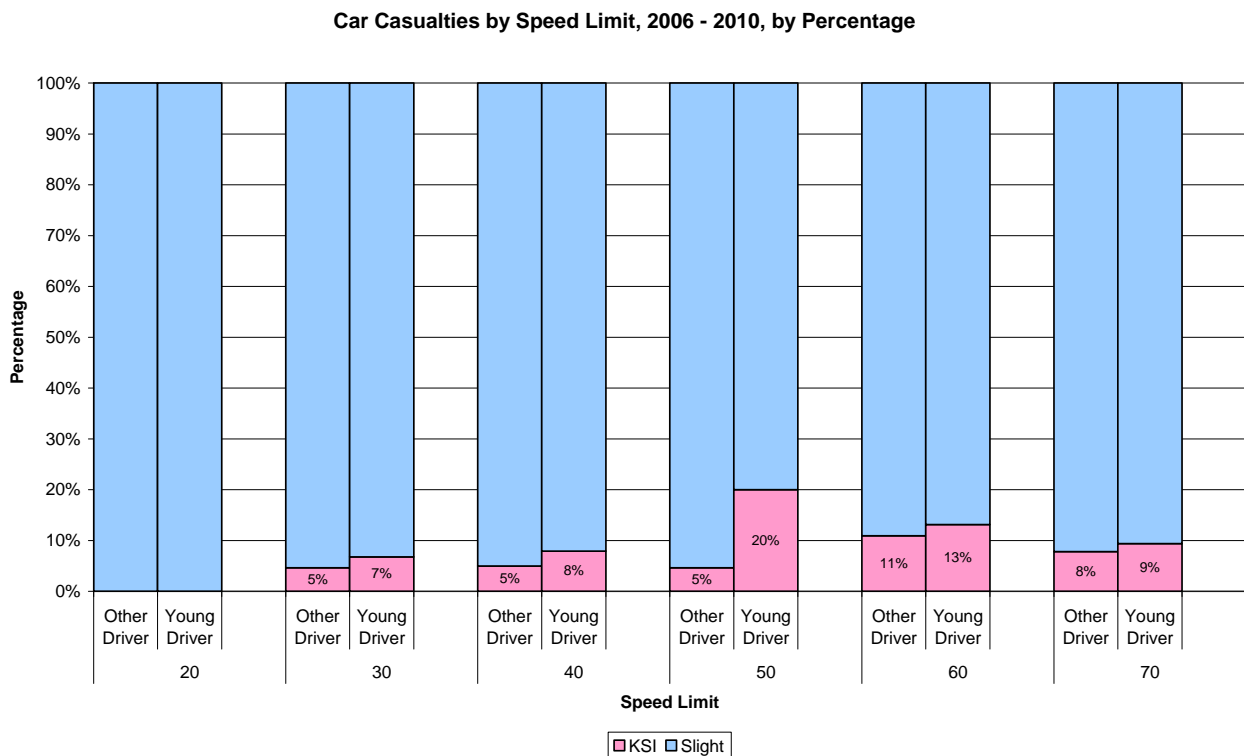


Figure 43: Casualty Severity in Cars Driven by Young and Other Drivers by Speed Limit, with KSI and slight casualties being displayed as percentages of total casualty numbers



Proposed Areas for Further Investigation

From reading this report it becomes clear that there are several areas that would benefit from further investigation. This will not be a definitive list, but is intended to provide a starting point for discussions on what information Northumberland would like to have further analysis on in the future. Moreover, after further investigation it may turn out that there is no underlying cause to some of these points, but this will not become apparent until work has been completed on the investigatory process. The general area of interest has been highlighted and then a suggestion made on what could be investigated further.

- The rise in adult pedestrian casualties in September and October
 - Time of day and reason for journey of these casualties
- The fluctuation in casualty severity for adult pedestrians during the week
 - Contributory factors and location
- Child pedestrian casualties at the start and end of the school day
 - Location (any particular black spots), vehicle information, contributory factors
- The number of child pedestrian casualties on 'Unclassified' Roads
 - Distance from home, time of day and contributing factors
- The rise in all pedal cyclist casualties on Wednesdays and in casualty severity on weekends
 - Reason for journey, location and contributing factors for these casualties
- The number of child pedal cyclist casualties on 'Unclassified' Roads
 - Distance from home, time of day and contributing factors
- The large number of casualties on motorcycles with an engine size of over 500cc
 - Reason for journey, location and contributing factors of collision
- The journey reason for car drivers during the week
 - Potentially to identify the number of casualties in cars driving for business purposes
- The weekend rise of casualties in cars driven by young drivers
 - Contributing factors, age of casualties in the car driven by the young driver
- The number and severity of casualties on 60mph roads for both cars and motorcycles
 - Specific road numbers and location mapping, time of day, purpose of journey, contributing factors
- The number of other vehicles involved in collisions where the driver of at least one of the cars was aged 17-25