

NORTH EAST Regional Road Safety Resource

Project Report: 12

Regional Overview of Bus Passenger Casualties 2004-2008

**Produced July 2009
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Introduction

This report has been produced by the NE Regional Road Safety Resource as an overview of bus passenger casualties in the region over the last 5 years. The data used to produce this report is based on the project database of Stats 19 provided by Cleveland, Durham, and Northumbria police forces.

Profile of Bus Passenger Casualties 04-08

Bus passenger casualties are recorded on the Stats 19 form and include those who were seated, standing, boarding, and alighting the vehicle at the time of injury. Those casualties that were injured having safely left the bus should always be coded as pedestrians.

Over the past 5 years (2004-08) there have been 2,024 bus passenger casualties in the NE region. This equates to an average of 405 casualties every year. Since 2006, bus passenger casualties have shown a rise.

Figure 1: Bus Passenger Casualties by Severity 2004-08

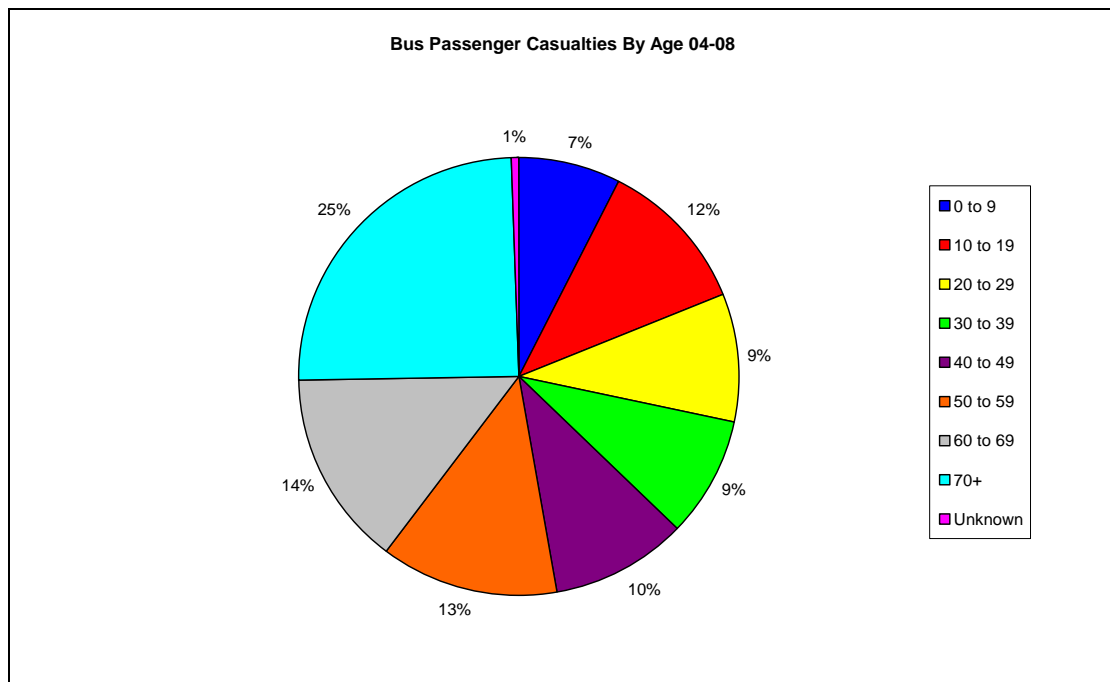
Casualty Severity	2004	2005	2006	2007	2008
Fatal	0	0	1	1	0
Serious	12	16	12	16	29
Slight	460	404	338	359	376
Total	472	420	351	376	405

Part of the increase in bus passenger casualties since 2006 will be due to the increase in bus use over the past 3 years. The 'National Transport Survey: 2007' produced in conjunction with the Department for Transport (DfT) shows a small increase in the number of people using the bus at least once a week compared to the previous survey. The survey also shows that there has been increases in bus concessionary fare take up amongst people aged 60+ since the new scheme was introduced in 2006. Increases in passenger numbers and the number of bus journeys made will increase the likelihood of a rise in casualty numbers.

Passenger Age

Looking at the casualty rates by age group it is clear to see that passengers aged 70+ are most at risk and make up 25% of bus passenger casualties. The concessionary bus fare scheme is available to all passengers aged 60+ and these passengers account for 39% of casualties.

Figure 2: Bus Passenger Casualties by Age 2004-08



Passenger Movement

Bus passenger casualties can be recorded in 4 categories depending upon what they were doing at the time of injury. These categories are boarding, alighting, standing, and seated. According to the DfT's Stats 20 information, 'boarding' or 'alighting' should only be used for passengers actually entering or leaving the bus; passengers who are moving around the bus compartment intending to alight or find a seat should be coded as 'standing'.

64% of bus passenger casualties were coded as 'seated' at the time of injury and not moving about the compartment in any way. A further 24% of bus passenger casualties were deemed to be 'standing' at the time of injury; either standing stationary or moving towards the exit or to a seat.

Bus passenger movement at the time of injury seems also to be linked with the age of the passenger. Passengers below the age of 30 are injured whilst seated more often than older passengers. By contrast older passengers tend to be injured far more when they are 'standing' or 'boarding' the vehicle.

Figure 3: Bus Passenger Casualties by Movement & Age 2004-08

Passenger Age	Boarding	Alighting	Standing	Seated
0 to 09	3%	5%	8%	84%
10 to 19	4%	6%	18%	72%
20 to 29	2%	3%	15%	80%
30 to 39	2%	4%	19%	75%
40 to 49	3%	4%	19%	74%
50 to 59	7%	5%	23%	65%
60 to 69	7%	5%	36%	52%
70+	17%	6%	33%	44%

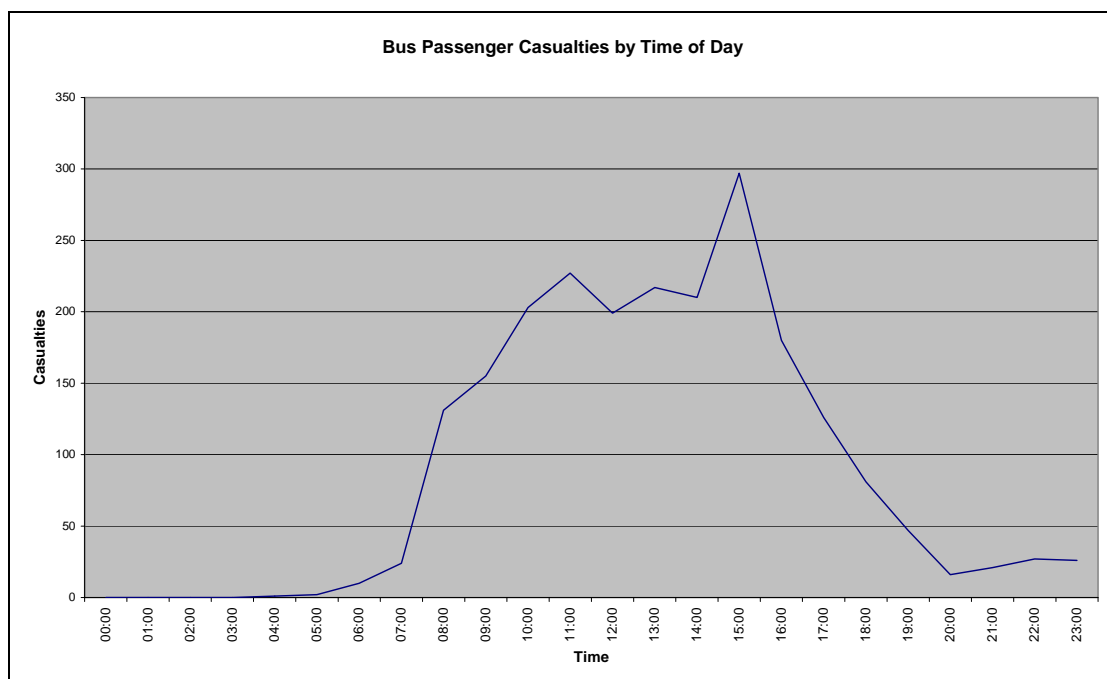
This shows that there may be safety issues regarding elderly passengers when they are boarding the bus and also moving around the compartment. It is hard to judge from the data available whether or not the vehicle was stationary when passengers were injured moving around the compartment.

Predominately most bus passengers (regardless of age) are injured whilst seated. This raises another safety issue as most buses are not fitted with seat belts or child restraints. The introduction of these safety measures would surely impact on the casualty levels of seated bus passengers.

Time of Day

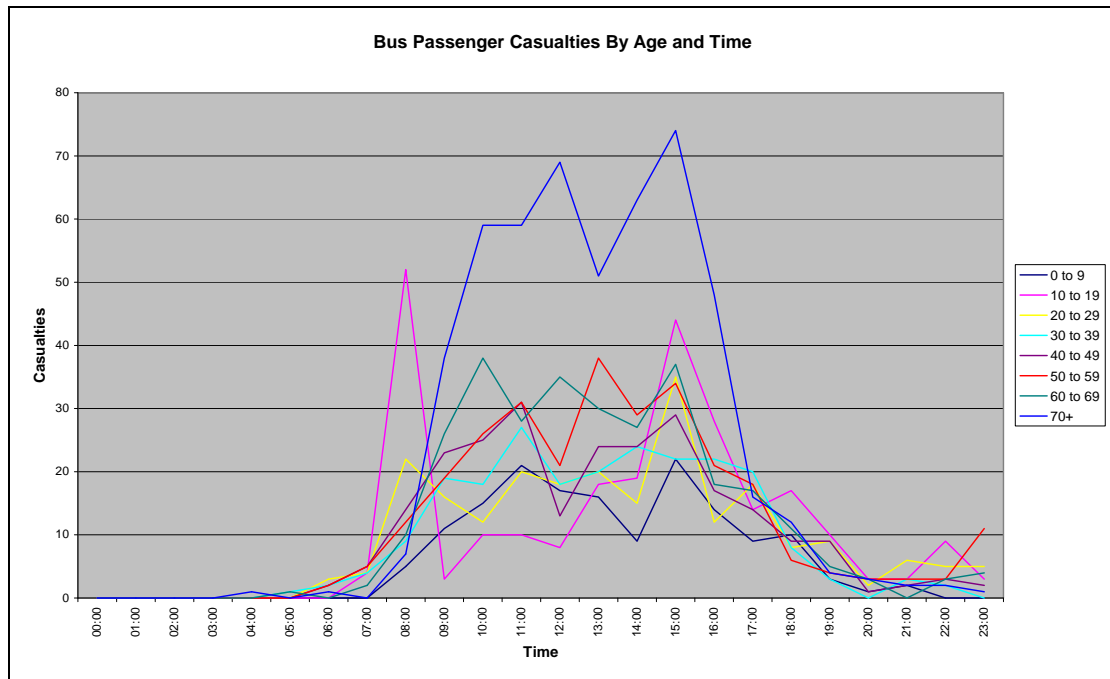
When plotting bus passenger casualties by time of day it is clear to see that casualty levels rise from 8am onwards and show a definite peak at 3pm. The 3pm peak will coincide with pupils/students travelling home from school.

Figure 4: Bus Passenger Casualties by Time of Day 2004-08



Breaking this down further into the different age ranges shows a quite different picture in terms of when casualties peak. The younger age ranges (in particular 10-19 and 20-29 year olds) show definite peaks at key commuting times for school/college/work. The older age ranges (in particular those aged 50+ years) show the highest casualty levels between 10am and 3pm. It should be noted that the concessionary bus scheme for 60+ passengers is in operation from 9:30am onwards.

Figure 5: Bus Passenger Casualties by Time & Age 2004-08



Day & Month

Bus passenger casualties are highest during the week and much lower at the weekend. Wednesday shows a small peak and this is a contrast to the trend for all casualties in the region which shows Friday as having the highest casualty levels. Higher levels on week days are to be expected since there are more buses in operation and more bus journeys made – as previously stated bus passenger casualties peak inline with key commuting and school times and these journeys are made during the week.

It is to be expected that Sunday should have the lowest casualty levels as fewer buses are in operation and fewer bus journeys are made. Fewer passengers and buses will inevitably lead to fewer bus passenger casualties. This is backed up by patronage figures for bus usage in the Tyne & Wear area, with fewer bus journeys made at the weekend.

Figure 6: Collisions Involving A Bus Passenger Injury by Day 2004-08

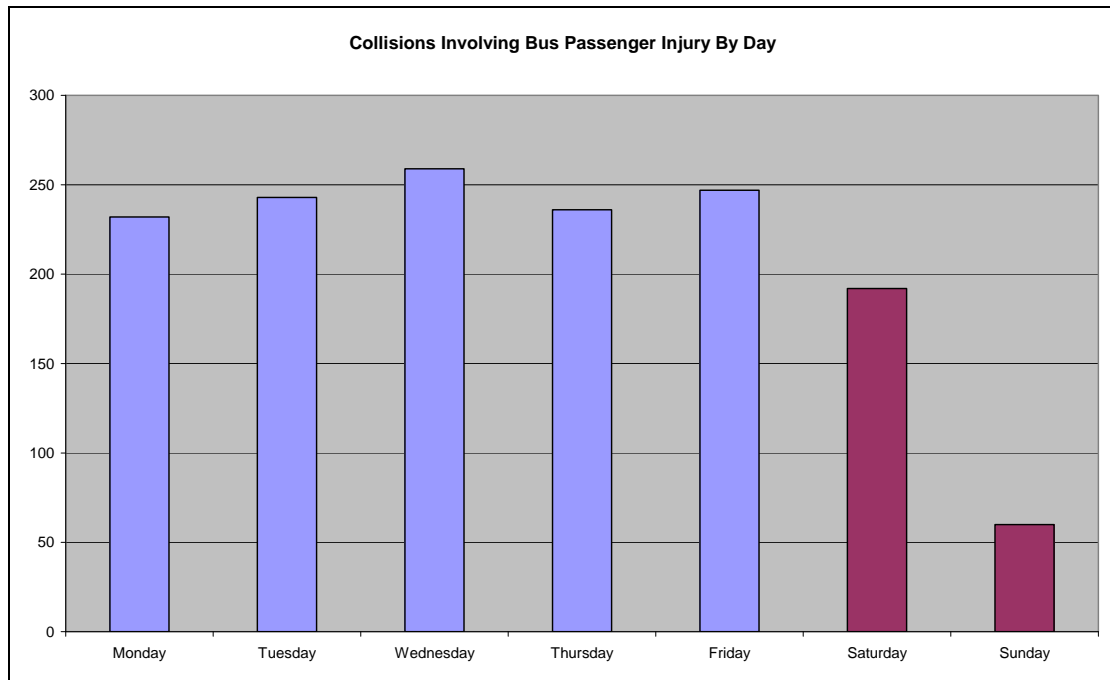
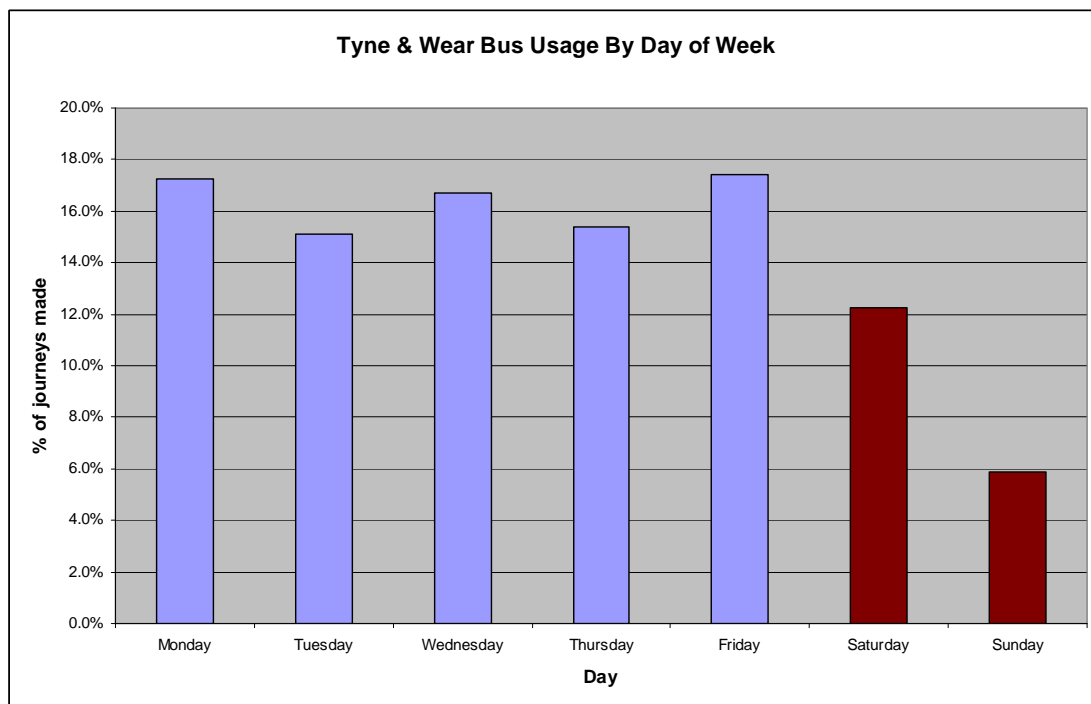
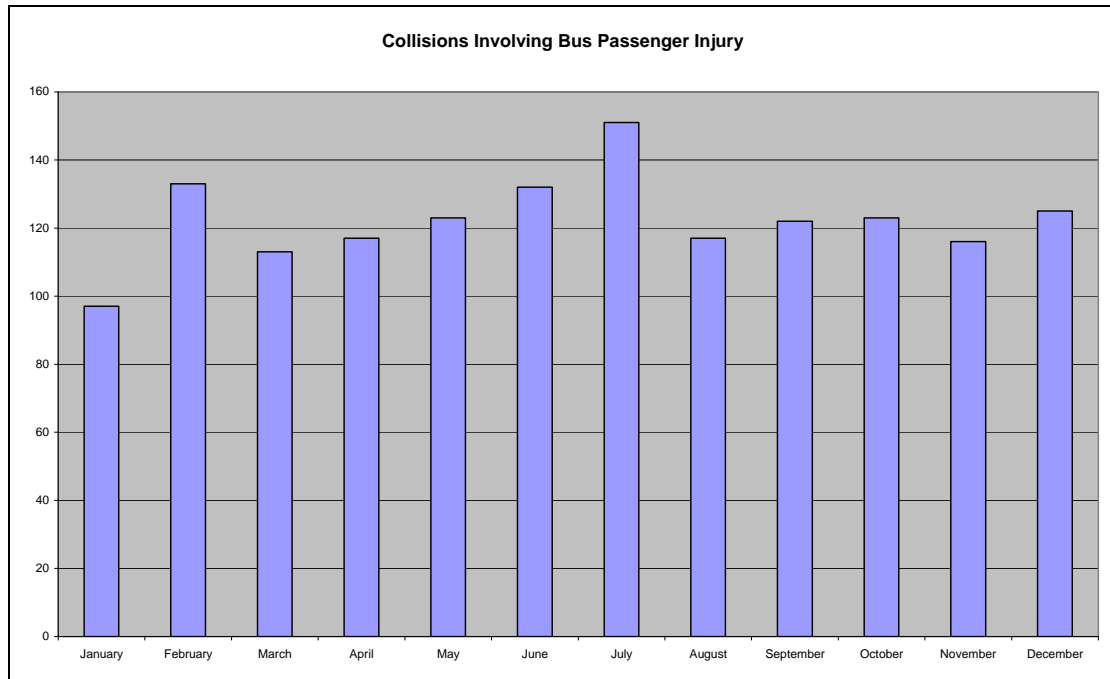


Figure 7: Tyne & Wear Bus Patronage By Day of Week



Throughout the calendar year bus passenger casualties are fairly consistent and have few peaks and troughs. July shows the highest levels and January the lowest. Bus patronage is also fairly constant throughout the year, with slightly higher levels during September-December but also in July (when casualty levels are also higher).

Figure 8: Collisions Involving A Bus Passenger Injury by Month 2004-08



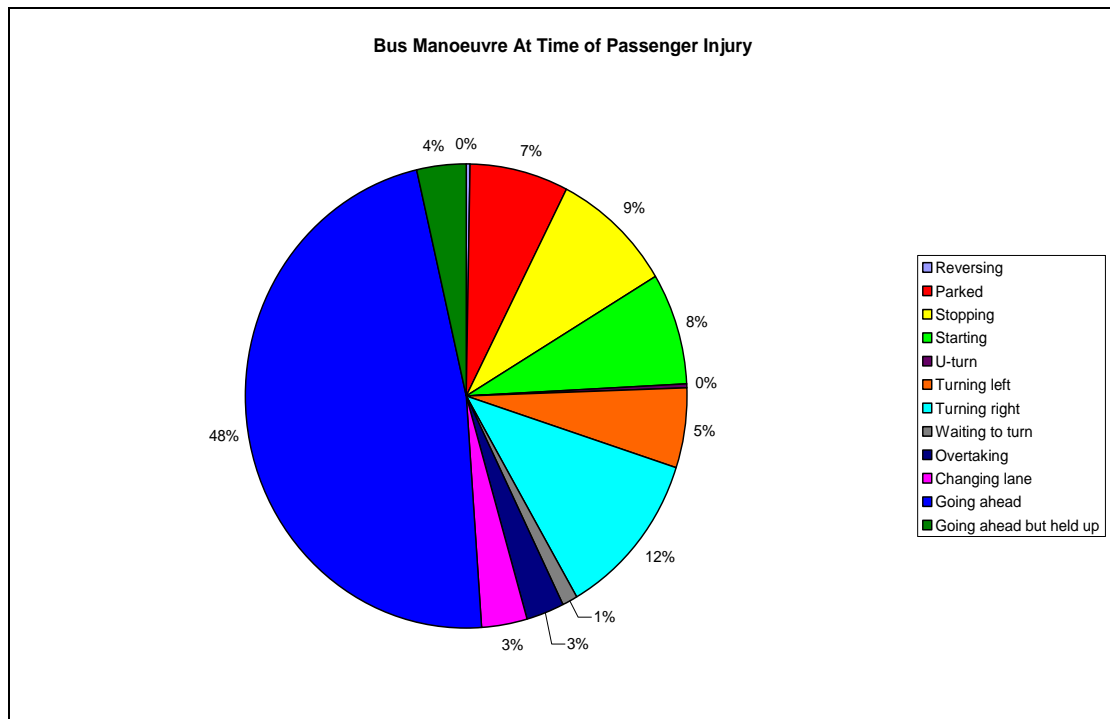
When compared against the trend for all road casualties there are some noticeable differences; July does not show the highest levels (November does), and February shows the lowest for all regional casualties.

Vehicle Movement/Manoeuvre

Vehicle manoeuvre is a field on the Stats 19 form that could be used to determine what may have caused injury to the bus passenger. This is particularly true for those passengers who were 'standing' when they were injured.

The breakdown shows that the majority of passenger injuries occur when the vehicle is moving. The most interesting statistics from this breakdown are that 48% of casualties are injured when the bus is going ahead, 17% when the bus is starting/stopping, 17% when the bus is turning, and 7% when the bus is parked.

Figure 9: Bus Manoeuvre At Time of Passenger Injury 2004-08

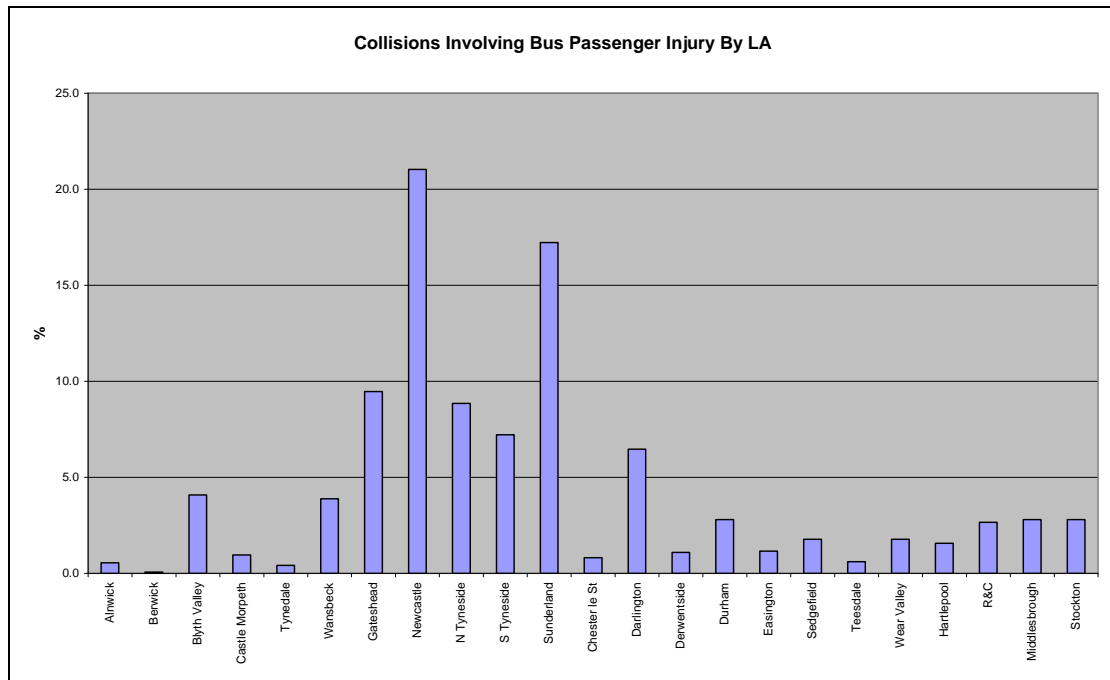


The majority (63%) of bus passengers injured as the bus was 'going ahead' or 'turning right' were seated at the time. This could show that there is a specific safety issue with bus seating and in particular the security of seated passengers; the addition of seat belts to buses could be one solution for this.

Local Authority

The areas with the highest casualty rates are not surprisingly those which have the most bus routes starting, ending, or passing through them. The Tyne & Wear local authorities account for 64% of bus passenger casualties. By contrast the more rural area of Northumberland accounts for less than 10% of casualties.

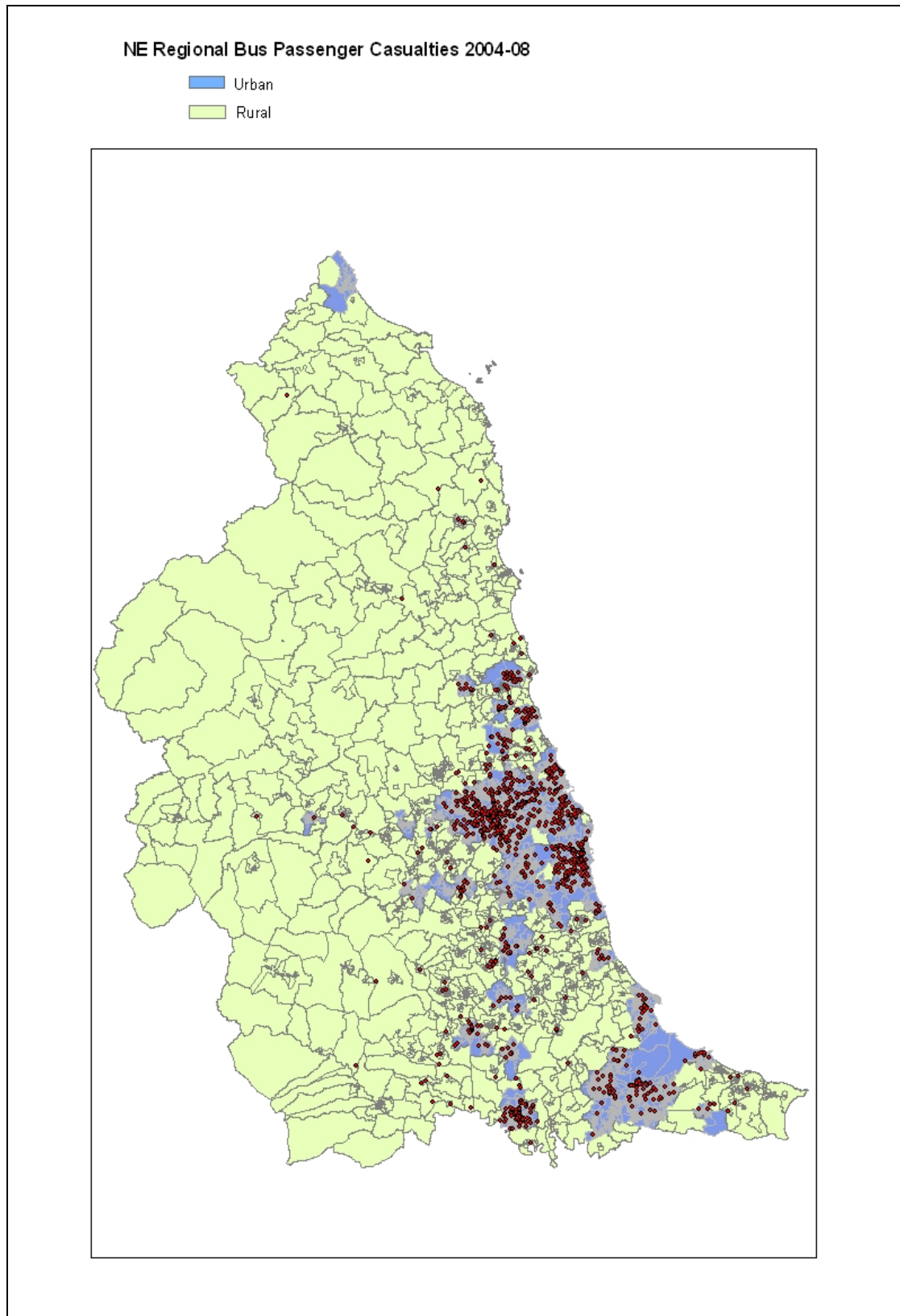
Figure 10: Bus Passenger Casualties by Local Authority 2004-08



This local authority breakdown would suggest that bus passenger casualties are definitely an urban problem. This is to be expected as more bus journeys are made on urban roads and most bus destinations tend to be urban towns or cities.

The mapping on the following page shows the location of bus passenger injuries in relation to urban/rural area.

Figure 11: Bus Passenger Casualties by Urban/Rural Area 2004-08



Contributory Factors

Analysis of all contributory factors associated with collisions involving a bus passenger casualty shows a very similar trend to all regional collisions with 'Failing to look properly' as the most coded.

However, more interestingly if the collisions involving other vehicles and pedestrians are taken out so that only contributory factors associated with the bus are analysed the top 3 are as follows:

- Sudden braking
- Poor turn or manoeuvre
- Careless/reckless/in a hurry

Collisions involving only the bus make up 54% of the total collisions in which a bus passenger was injured. They also place the total onus on the bus driver and passenger themselves as no one else is involved in the collision. Not surprisingly it shows that bus passengers are most at risk during braking, turning, and speeding.

Headline Notes

- On average 405 bus passengers are injured every year.
- Casualty rates have continued to rise since 2006 inline with the rise of bus journeys and the introduction of the new concessionary bus scheme for over 60's.
- A quarter of all casualties are over 70 years old.
- The majority of passengers were 'seated' at the time of injury.
- Casualty rates are highest between 8am and 4pm.
- Casualty rates higher when the bus is moving.
- Urban areas have the highest bus passenger casualties.
- Bus driver error plays a major part in passenger injury when no other vehicle is involved.

The issues outlined in this report could be tackled through partnership working between local authorities and the several bus companies in the region. Possible safety measures that could be introduced include seat belts and a no standing policy on buses. Other safety measures specifically aimed at young children would also help to lower bus passenger casualties.