



**Fact Sheet**

**London Road Safety Unit  
LAAU topic 2005-1**

February 2005

**Bus and coach casualties in Greater London**

This fact sheet illustrates the scale and nature of road traffic collisions resulting in injury to drivers and passengers of buses and coaches in the Greater London area in 2003 (the latest full year for which data is available). Information is also provided on the longer-term trends between 1981 and 2003.

It provides background information to support the Government and Mayor of London's target for 2010, to reduce the number of road casualties killed or seriously injured (KSI) by 40% from the baseline of the average number of casualties for 1994-98.

The data provided is for personal injury road traffic collisions occurring on the public highway that are reported to the Police in accordance with the *Stats 19* national reporting system.

For the purpose of this fact sheet, the term 'buses and coaches' includes all vehicles with bus-type or coach-type bodies, equipped to carry 17 or more seated passengers, whether or not they are licensed as passenger-carrying vehicles, or operating as local bus services. For convenience, all these

vehicles will be referred to as 'buses' throughout this fact sheet.

**London's bus and coach casualty rate**

In 2003 there were 31,811 road traffic collisions, resulting in 38,430 casualties in Greater London. Of these collisions, 1,931 (6%) involved injury to bus occupants, and resulted in 2,343 casualties (6% of all casualties). This total consisted of 146 bus drivers (6%) and 2,197 passengers (94%).

In Great Britain as a whole, there were 9,068 bus occupant casualties recorded in 2003, comprising 862 drivers (9.5%) and 8,206 passengers (90.5%). Therefore, 26% of all bus occupant casualties in Great Britain were injured in the Greater London area, reflecting the importance of buses as a mode of travel in the Capital.

Table 1 (on page 2) shows bus occupant casualties by casualty class, gender, severity and severity ratio (the percentage of fatal and serious injuries to all injuries) in Greater London, 2003.

**Table 1: Bus occupant casualties by casualty class, gender, severity & severity ratio in Greater London 2003**

		Severity of casualty			Total	Severity ratio
		Fatal	Serious	Slight		
Male	Driver	0	16	115	131	12%
	Passenger	4	59	624	687	9%
	<b>Total</b>	<b>4</b>	<b>75</b>	<b>739</b>	<b>818</b>	<b>10%</b>
Female	Driver	0	4	11	15	27%
	Passenger	1	139	1,370	1,510	9%
	<b>Total</b>	<b>1</b>	<b>143</b>	<b>1,381</b>	<b>1,525</b>	<b>9%</b>
All	Driver	0	20	126	146	14%
	Passenger	5	198	1,994	2,197	9%
	<b>Total</b>	<b>5</b>	<b>218</b>	<b>2,120</b>	<b>2,343</b>	<b>10%</b>

## Annual trends 1981 to 2003

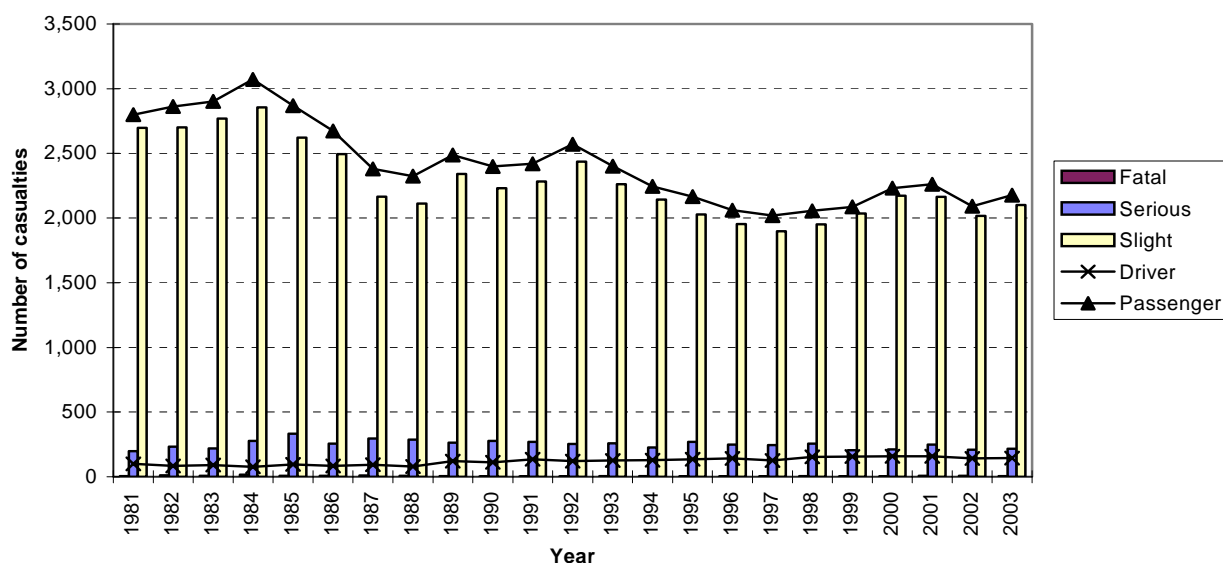
The following section shows changes in the number of bus occupant casualties recorded in Greater London from 1981 to 2003. It should be noted that the City of London has been excluded from this long-term trend analysis, as its accident data was only available from 1986 onwards.

Table 2 and Figure 1 show the number of bus occupant casualties by year, severity and casualty class from 1981 to 2003 in Greater London, excluding the City of London.

**Table 2 : Bus occupant casualties by year, casualty class and severity in Greater London (excl. City of London) 1981 to 2003**

Year of accident	Casualty class			Severity of casualty			Total	Severity ratio
	Collisions	Driver	Passenger	Fatal	Serious	Slight		
1981	2,585	99	2,800	5	197	2,697	2,899	7%
1982	2,626	84	2,861	11	233	2,701	2,945	8%
1983	2,721	91	2,902	6	219	2,768	2,993	8%
1984	2,778	77	3,072	16	277	2,856	3,149	9%
1985	2,609	95	2,868	8	333	2,622	2,963	12%
1986	2,452	84	2,673	6	257	2,494	2,757	10%
1987	2,092	92	2,380	10	296	2,166	2,472	12%
1988	2,109	79	2,325	6	287	2,111	2,404	12%
1989	2,239	121	2,487	4	264	2,340	2,608	10%
1990	2,155	112	2,398	3	276	2,231	2,510	11%
1991	2,184	136	2,419	3	269	2,283	2,555	11%
1992	2,214	121	2,570	2	254	2,435	2,691	10%
1993	2,067	125	2,400	4	259	2,262	2,525	10%
1994	1,923	129	2,244	4	227	2,142	2,373	10%
1995	1,929	136	2,166	3	271	2,028	2,302	12%
1996	1,863	143	2,062	2	249	1,954	2,205	11%
1997	1,762	126	2,018	2	245	1,897	2,144	12%
1998	1,862	154	2,057	4	256	1,951	2,211	12%
<b>1994 to 1998 average</b>	<b>1,867.8</b>	<b>137.6</b>	<b>2,109.4</b>	<b>3.0</b>	<b>249.6</b>	<b>1,994.4</b>	<b>2,247.0</b>	<b>11%</b>
1999	1,869	157	2,087	3	205	2,036	2,244	9%
2000	1,925	158	2,230	2	213	2,173	2,388	9%
2001	1,976	158	2,262	6	250	2,164	2,420	11%
2002	1,820	141	2,092	7	209	2,017	2,233	10%
2003	1,912	145	2,177	5	216	2,101	2,322	10%
<b>% change 1994-98 average to 2003</b>	<b>2%</b>	<b>5%</b>	<b>3%</b>	<b>67%</b>	<b>-13%</b>	<b>5%</b>	<b>3%</b>	<b>-</b>

**Fig 1: Bus occupant casualties by year, severity and casualty class in Greater London (excl. City) 1981 to 2003**



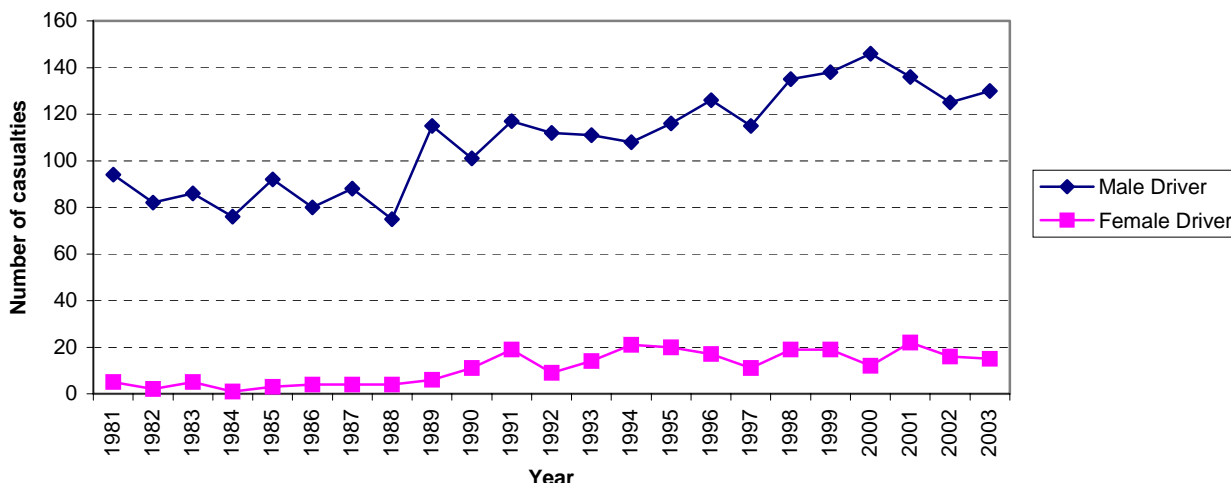
The number of bus occupant casualties has shown fluctuations over this period, but the general trend has been downward. Casualties peaked at 3,149 in 1984 and fell to a low of 2,144 in 1997. This is a decrease of 32%. While numbers have risen again since 1997, the total for 2003 was 26% lower than the 1984 peak.

When comparing the 2010 target baseline (1994-98 average) and 2003 there have been increases in both fatal and slight casualties (67% and 5% respectively), but a fall in those seriously injured (-13%). KSI casualties fell by 13%, but overall bus

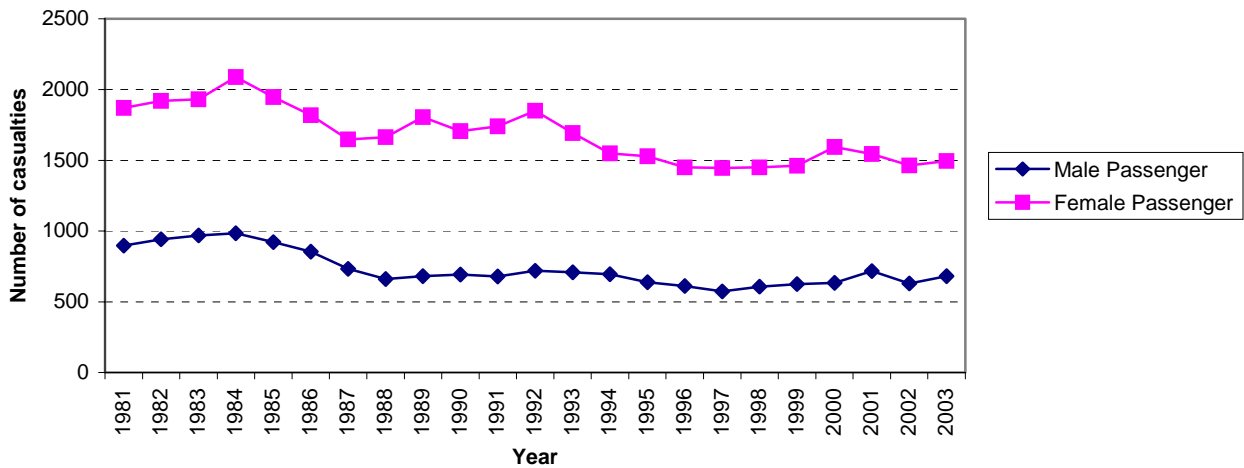
occupant casualties rose by 3%. In terms of casualty class, increases were seen in both drivers (5%) and passengers (3%) in 2003 compared with the 1994-98 average.

To view these increases in perspective, it is important to look at changes in casualty numbers in relation to changes in bus usage. Between 1994/95 and 2003/04 the number of bus passenger journeys rose by 47%, while between 1994 and 2003, all bus occupant casualties decreased by 2% and KSI casualties by 4%. Bus usage is considered in more detail on page 7.

**Fig 2: Bus driver casualties by gender in Greater London (excl. City) 1981 to 2003**



**Fig 3: Bus passenger casualties by gender in Greater London 1981 to 2003**



### Gender

Figures 2 and 3 above show bus driver and passenger casualties by gender in Greater London (excluding the City of London) from 1981 to 2003.

As can be seen from Figure 2, the greatest proportion of bus driver casualties was male, with an average of 91% per year over the period. The proportion of males to females has changed slightly over time, with males accounting for 95% of driver casualties in 1981, compared to 90% in 2003. This indicates an increase in female drivers over recent years. Both male and female driver casualties have shown a general upward trend throughout most of this period, with males increasing by 38% and females by 200% in 2003 compared with 1981. This is linked to the increase in bus services in London over this period.

This situation is reversed for bus passenger casualties, with many more

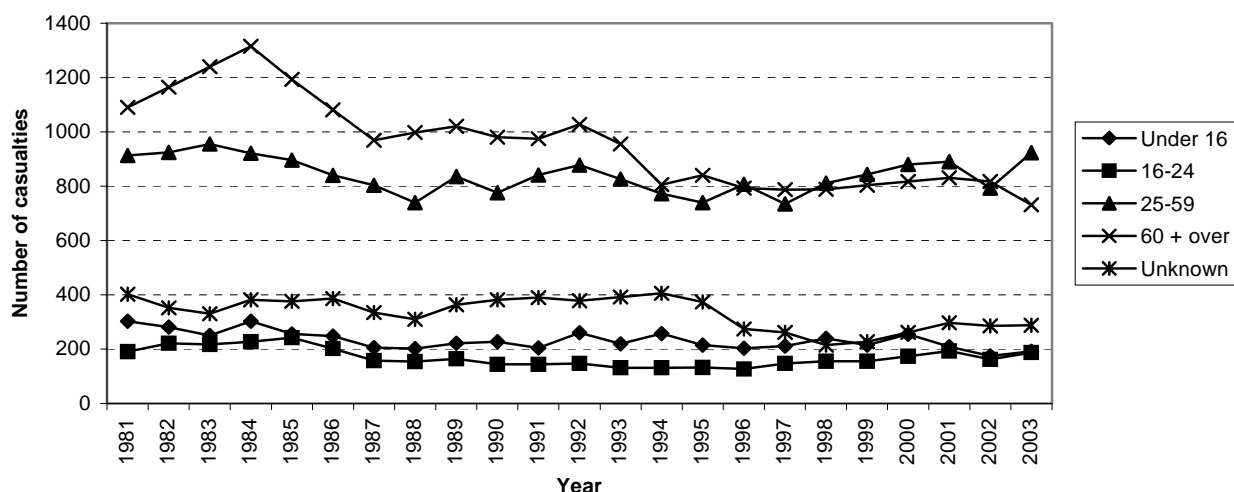
females being injured than males – an average of 70% female per year to 30% male. This split has remained fairly constant over time. The predominance of female passenger casualties is likely to be due to the fact that on average in London, women make more bus trips per day than men. The LATS Household Survey 2001 records 0.37 trips per person per day for women, compared with 0.27 for men.

Figure 3 shows that the general trend for bus passenger casualties has been downward over this period, with males decreasing by 24% and females by 20% in 2003 compared with 1981. However, both genders showed a slight increase in casualty numbers in 2003 compared with 2002 (8% male and 2% female).

### Age

Table 3 and Figure 4 show bus occupant casualties by year and age (banded) in Greater London from 1981 to 2003.

**Fig 4: Bus occupant casualties by year and age (banded) in Greater London (excl. City)  
1981 to 2003**



**Table 3 : Bus occupant casualties by year and age (banded) in Greater London (excl. City of London) 1981 to 2003**

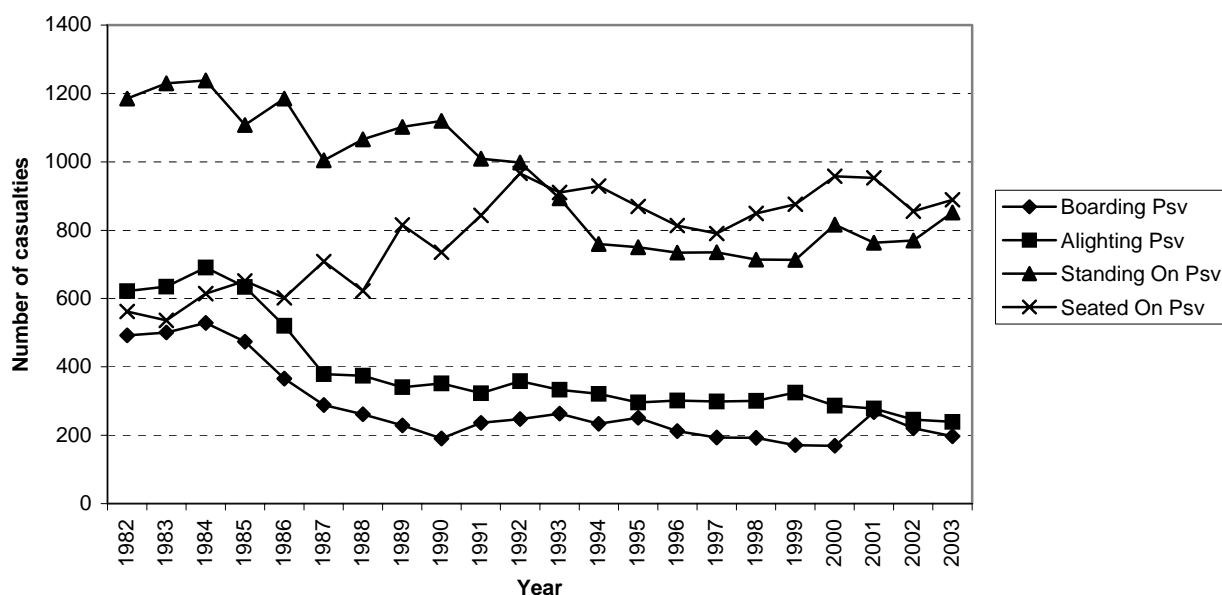
	Casualty age banded					Total	% aged	% aged	% aged	% aged
	Under 16	16-24	25-59	60 + over	Unknown		Under 16	16-24	25-59	60+
1981	303	191	913	1090	402	2,899	10%	7%	31%	38%
1982	281	222	925	1165	352	2,945	10%	8%	31%	40%
1983	250	217	956	1240	330	2,993	8%	7%	32%	41%
1984	303	227	921	1316	382	3,149	10%	7%	29%	42%
1985	256	242	896	1193	376	2,963	9%	8%	30%	40%
1986	248	202	840	1081	386	2,757	9%	7%	30%	39%
1987	206	158	804	969	335	2,472	8%	6%	33%	39%
1988	202	154	740	998	310	2,404	8%	6%	31%	42%
1989	222	165	836	1021	364	2,608	9%	6%	32%	39%
1990	227	144	776	981	382	2,510	9%	6%	31%	39%
1991	205	144	841	975	390	2,555	8%	6%	33%	38%
1992	261	147	878	1027	378	2,691	10%	5%	33%	38%
1993	219	132	826	956	392	2,525	9%	5%	33%	38%
1994	257	131	773	806	406	2,373	11%	6%	33%	34%
1995	215	133	740	840	374	2,302	9%	6%	32%	36%
1996	204	127	807	793	274	2,205	9%	6%	37%	36%
1997	212	147	735	788	262	2,144	10%	7%	34%	37%
1998	240	155	812	789	215	2,211	11%	7%	37%	36%
<b>1994 to 1998 average</b>	<b>225.6</b>	<b>139</b>	<b>773.4</b>	<b>803.2</b>	<b>306.2</b>	<b>2,247.0</b>	<b>10%</b>	<b>6%</b>	<b>34%</b>	<b>36%</b>
1999	215	155	843	803	228	2,244	10%	7%	38%	36%
2000	255	174	880	817	262	2,388	11%	7%	37%	34%
2001	209	193	890	831	297	2,420	9%	8%	37%	34%
2002	175	162	793	817	286	2,233	8%	7%	36%	37%
2003	192	187	923	732	288	2,322	8%	8%	40%	32%
<b>% change 1994-98 average to 2003</b>	<b>-15%</b>	<b>35%</b>	<b>19%</b>	<b>-9%</b>	<b>-6%</b>	<b>3%</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

On average, over the 1981 to 2003 time period, the 60 years and above age group had the highest number of bus occupant casualties (38%), the vast majority of these being bus passengers. Casualty numbers in this age group have fluctuated over recent years, from a low of 788 in 1997, rising to 831 in 2001 and falling to the lowest number in this group (732) in 2003. The trend over the period has been downward and the 2003 total represented a 9% reduction on the 1994-98 average. The fact that there are

more bus occupant casualties in this group is not unexpected, due to the relatively high numbers of older people who use buses.

Casualties in the under 16 years age group also fell in relation to the 1994-98 average (-15%). However, there were increases in both the 16-24 and 25-59 years age bands of 35% and 19% respectively compared with the 1994-98 average.

**Fig 5: Bus passenger casualties by year and passenger activity in Greater London (excl. City) 1982 to 2003**



### Passenger action

Figure 5 shows bus passenger casualties by passenger action in Greater London (excluding the City) from 1982 to 2003. Data on bus passenger action was not available prior to 1982.

Overall, bus passenger casualties have decreased by 24% between 1982 and 2003. There were decreases for all passenger actions, except those seated on the bus, which increased by 58%. Casualties standing on the bus have fallen by 28% between 1982 and 2003. However, the largest decreases are in the boarding and alighting categories, which fell by 60% and 62% respectively over this period.

The large reduction in injury as passengers board or alight the bus is

likely to be due to the increasing use of fully enclosed buses and the gradual phasing out of the older open-platform Routemaster buses.

### City of London

Data for the City of London is only available on the LAU ACCSTATS database from 1986 onwards. Table 4 shows bus occupant casualties in the City of London from 1986 to 2003.

Casualty numbers are extremely low in the City. There have been no bus occupant fatalities in this time period and both serious and slight injuries show reductions compared with the 1994-98 average (-47% and -17% respectively).

Table 4 : Bus occupant collisions and casualties by year, severity and severity ratio in the City of London 1986 to 2003

Year of accident	Collisions	Severity of casualty			Total	Severity ratio
		Fatal	Serious	Slight		
1986	25	0	1	25	26	4%
1987	29	0	0	34	34	0%
1988	11	0	0	11	11	0%
1989	28	0	2	33	35	6%
1990	21	0	2	20	22	9%
1991	29	0	5	26	31	16%
1992	27	0	2	28	30	7%
1993	25	0	3	24	27	11%
1994	24	0	2	26	28	7%
1995	30	0	5	27	32	16%
1996	17	0	0	17	17	0%
1997	23	0	6	23	29	21%
1998	25	0	6	22	28	21%
<b>1994 to 1998 average</b>	<b>23.8</b>	<b>0</b>	<b>3.8</b>	<b>23</b>	<b>26.8</b>	<b>14%</b>
1999	24	0	1	28	29	3%
2000	29	0	0	31	31	0%
2001	30	0	6	28	34	18%
2002	25	0	4	22	26	15%
2003	19	0	2	19	21	10%
<b>% change 1994-98 average to 2003</b>	<b>-20%</b>	<b>-</b>	<b>-47%</b>	<b>-17%</b>	<b>-22%</b>	<b>-</b>

## Travel by bus

In order to get a better understanding of the extent of the bus occupant collision problem in London, it is important to look at casualty numbers in relation to bus flows and usage.

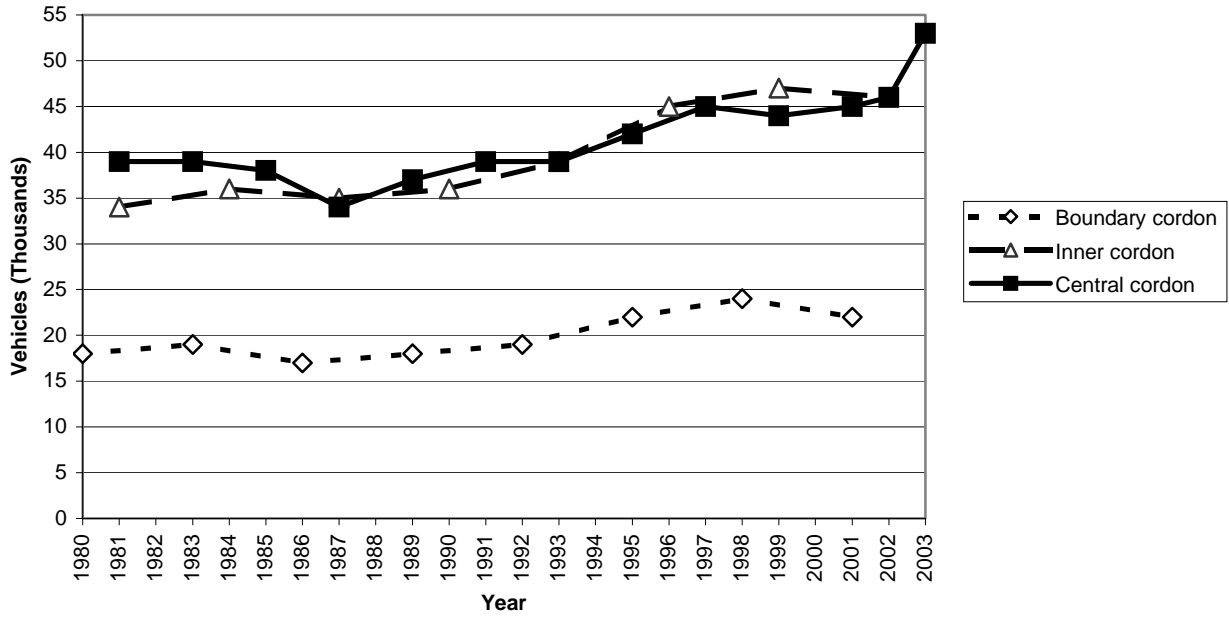
Regular surveys of radial traffic movements in London are carried out which give useful indicators of the change in travel over time. These surveys measure 24-hour radial vehicle flows crossing the Greater London boundary and inner and central London cordons. Each cordon is measured every two to three years.

Figure 6 shows the radial cordon, combined direction, 24-hour bus and coach movements 1980 to 2003. The general trend in the number of buses crossing all cordons has been upward over this period. Numbers across the boundary cordon increased by 2%

between 1980 and 2001, those across the inner cordon increased by 35% between 1981 and 2002, and across the central cordon by 36% between 1981 and 2003. However, in more recent years numbers across the boundary cordon and inner cordon have in fact fallen slightly (-8% between 1998 and 2001 across the boundary and -2% between 1999 and 2002 across the inner cordon), while numbers across the central cordon have continued to rise (+15% between 2002 and 2003).

In addition to the general upward trend in bus flows, passenger volumes have been increasing steadily. Over the last ten years bus passenger volumes have risen over 36% and are at their highest levels for over 30 years. The total passenger kilometres by bus have increased every year since 1998/99 and rose almost 50% between 1998/99 and 2003/04 (see Figure 7).

**Fig 6: Radial bus and coach movements in London, both directions combined, 1980-2003**



**Fig 7: Bus passenger kms in Greater London 1991-2004**

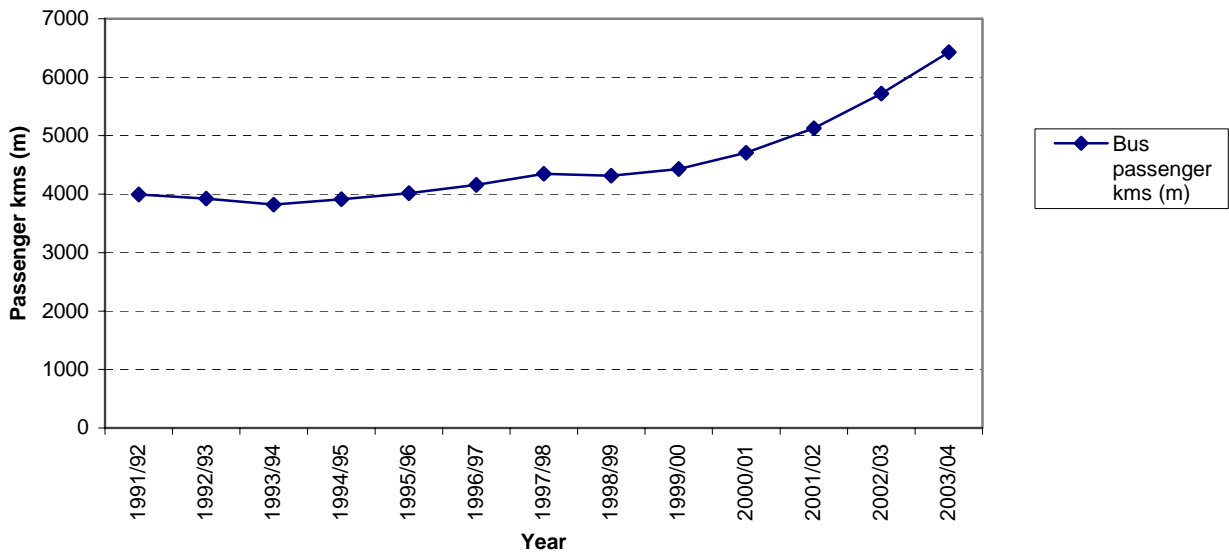


Fig 7 Data source: TfL Service Performance Data, ONS – London Travel Report 2004



## Bus and coach occupant casualties in Greater London during 2003

The following section provides a more detailed analysis of bus occupant casualties in Greater London, including the City of London, for 2003. This is the most recent year which finalised data was available at the time of writing.

### How many?

During 2003 there were 31,811 personal injury road traffic collisions reported to the Police in the Greater London area. Of these collisions 1,931 (6%) involved injury to bus occupants and resulted in 2,343 bus driver or passenger casualties.

Most bus occupants were slightly injured (90.5%) with 9.3% suffering serious injury and less than 1% being killed. In total, bus occupant casualties that were killed or seriously injured accounted for 4.3% of all KSI's in Greater London.

The majority of bus occupant casualties were female (65%) compared with 35% male. 94% of casualties were passengers, of these 69% were female. Of the 6% bus driver casualties, 90% were male and only 10% female.

### What is the cost?

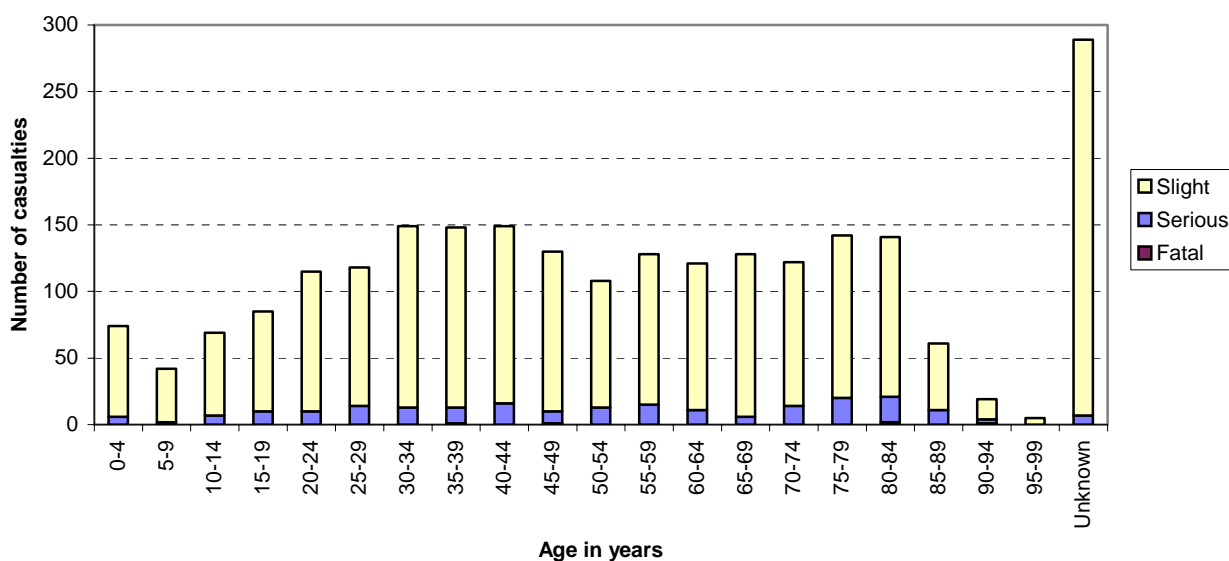
Based on the average cost of bus and coach occupant casualties from DfT *Highways Economics Note No. 1*, at June 2003 prices, the cost to the community of bus occupant casualties is estimated at around £47.5 million (approximately £50 million at June 2004 prices).

The 2,343 bus occupant casualties recorded in 2003 averaged 6.4 per day, with a subsequent cost to the community of approximately £130,000 per day.

### How old?

Figure 8 and Table 5 show the number of bus occupant casualties by five-year age bands, gender, severity and severity ratio in Greater London, 2003.

Fig 8: Bus occupant casualties by age-band and severity in Greater London 2003



**Table 5: Bus occupant casualties by age-band, gender, severity and severity ratio in Greater London 2003**

Casualty age	Severity of casualty					Total	Severity ratio	% of known age
	Male	Female	Fatal	Serious	Slight			
0-4	43	31	0	6	68	74	8%	4%
5-9	19	23	0	2	40	42	5%	2%
10-14	34	35	0	7	62	69	10%	3%
15-19	26	59	0	10	75	85	12%	4%
20-24	25	90	0	10	105	115	9%	6%
25-29	50	68	0	14	104	118	12%	6%
30-34	51	98	0	13	136	149	9%	7%
35-39	64	84	1	12	135	148	9%	7%
40-44	60	89	0	16	133	149	11%	7%
45-49	51	79	1	9	120	130	8%	6%
50-54	33	75	0	13	95	108	12%	5%
55-59	38	90	0	15	113	128	12%	6%
60-64	39	82	0	11	110	121	9%	6%
65-69	39	89	0	6	122	128	5%	6%
70-74	39	83	0	14	108	122	11%	6%
75-79	37	105	0	20	122	142	14%	7%
80-84	37	104	2	19	120	141	15%	7%
85-89	16	45	0	11	50	61	18%	3%
90-94	5	14	1	3	15	19	21%	1%
95-99	4	1	0	0	5	5	0%	0%
<b>Total (age known)</b>	<b>710</b>	<b>1,344</b>	<b>5</b>	<b>211</b>	<b>1,838</b>	<b>2,054</b>	<b>11%</b>	<b>100%</b>
Total (age unknown)	108	181	0	7	282	289	2%	-
<b>Total</b>	<b>818</b>	<b>1,525</b>	<b>5</b>	<b>218</b>	<b>2,120</b>	<b>2,343</b>	<b>10%</b>	<b>-</b>

Casualty numbers were fairly evenly distributed over the five-year age bands ranging from 20-24 years to 80-84 years with minor peaks between 30-44 years and 75 to 84 years. 36% of bus occupant casualties of known age were aged 60 years and over. 71% of these casualties were female and only 9% male. The highest numbers of female casualties were in the 75-79 and 80-84 year age groups.

The highest severity ratios were found in the 85-89 and 90-94 year age groups (18% and 21% respectively). This is partly due to the relatively low numbers of casualties in each of these groups (3% and 1% of known age respectively), but also highlights the greater vulnerability of the elderly to serious injury.

### Where?

Table 6 shows the number of bus occupant casualties by borough, gender and severity in Greater London, 2003.

Just over half (56%) of all bus occupant casualties were injured on roads in inner London, this included 53% of all serious injuries and 56% of all slight. The majority (60%) of bus occupant fatalities occurred on roads in outer London, although the numbers are extremely small.

While slightly more casualties were injured in inner London, the average severity ratio was slightly higher in outer London (10% compared to 9%).

**Table 6: Bus occupant casualties by borough, gender and severity in Greater London 2003**

Borough	Gender		Severity of casualty			Total	Severity ratio
	Male	Female	Fatal	Serious	Slight		
City of London	7	14	0	2	19	21	10%
Westminster	101	197	0	26	272	298	9%
Camden	40	61	1	13	87	101	14%
Islington	19	65	0	8	76	84	10%
Hackney	30	70	0	10	90	100	10%
Tower Hamlets	19	15	0	3	31	34	9%
Greenwich	33	67	0	6	94	100	6%
Lewisham	37	82	0	5	114	119	4%
Southwark	53	75	0	10	118	128	8%
Lambeth	47	74	0	9	112	121	7%
Wandsworth	25	49	0	4	70	74	5%
Hammersmith & Fulham	24	56	1	13	66	80	18%
Kensington & Chelsea	21	33	0	6	48	54	11%
<b>Total inner London</b>	<b>456</b>	<b>858</b>	<b>2</b>	<b>115</b>	<b>1,197</b>	<b>1,314</b>	<b>9%</b>
<b>% of Greater London</b>	<b>56%</b>	<b>56%</b>	<b>40%</b>	<b>53%</b>	<b>56%</b>	<b>56%</b>	<b>-</b>
Waltham Forest	12	33	0	4	41	45	9%
Redbridge	17	26	0	8	35	43	19%
Havering	13	24	0	2	35	37	5%
Barking & Dagenham	7	22	0	6	23	29	21%
Newham	26	36	0	2	60	62	3%
Bexley	9	23	0	2	30	32	6%
Bromley	19	40	0	4	55	59	7%
Croydon	33	62	1	13	81	95	15%
Sutton	8	21	1	3	25	29	14%
Merton	5	25	0	3	27	30	10%
Kingston	3	23	0	0	26	26	0%
Richmond	7	22	0	5	24	29	17%
Hounslow	18	25	0	3	40	43	7%
Hillingdon	19	21	0	8	32	40	20%
Ealing	33	52	0	4	81	85	5%
Brent	31	51	0	14	68	82	17%
Harrow	16	14	0	1	29	30	3%
Barnet	23	60	0	7	76	83	8%
Haringey	35	38	1	5	67	73	8%
Enfield	28	49	0	9	68	77	12%
<b>Total outer London</b>	<b>362</b>	<b>667</b>	<b>3</b>	<b>103</b>	<b>923</b>	<b>1,029</b>	<b>10%</b>
<b>% of Greater London</b>	<b>44%</b>	<b>44%</b>	<b>60%</b>	<b>47%</b>	<b>44%</b>	<b>44%</b>	<b>-</b>
<b>Total Greater London</b>	<b>818</b>	<b>1,525</b>	<b>5</b>	<b>218</b>	<b>2,120</b>	<b>2,343</b>	<b>10%</b>

**Table 7: Bus occupant casualties by borough, casualty class and age group in Greater London 2003**

Borough	Casualty class		Casualty age (banded)				Unknown	Total
	Driver	Passenger	Under 16	16-24	25-59	60 + over		
City of London	1	20	1	5	7	7	1	21
Westminster	13	285	23	37	124	78	36	298
Camden	9	92	7	11	55	24	4	101
Islington	0	84	5	7	40	25	7	84
Hackney	4	96	13	3	41	33	10	100
Tower Hamlets	5	29	2	5	14	8	5	34
Greenwich	7	93	10	8	36	29	17	100
Lewisham	9	110	14	5	46	32	22	119
Southwark	7	121	13	7	59	32	17	128
Lambeth	7	114	10	7	64	25	15	121
Wandsworth	5	69	3	6	26	32	7	74
Hammersmith & Fulham	3	77	4	10	41	23	2	80
Kensington & Chelsea	4	50	1	6	21	22	4	54
<b>Total inner London</b>	<b>74</b>	<b>1,240</b>	<b>106</b>	<b>117</b>	<b>574</b>	<b>370</b>	<b>147</b>	<b>1,314</b>
<b>% of Greater London</b>	<b>51%</b>	<b>56%</b>	<b>55%</b>	<b>61%</b>	<b>62%</b>	<b>50%</b>	<b>51%</b>	<b>56%</b>
Waltham Forest	2	43	2	2	17	15	9	45
Redbridge	2	41	5	3	10	18	7	43
Havering	4	33	5	2	7	13	10	37
Barking & Dagenham	1	28	2	3	9	10	5	29
Newham	4	58	11	5	24	11	11	62
Bexley	0	32	3	1	9	16	3	32
Bromley	3	56	3	2	10	32	12	59
Croydon	6	89	11	10	33	36	5	95
Sutton	1	28	0	2	7	19	1	29
Merton	1	29	0	2	12	13	3	30
Kingston	1	25	0	2	9	15	0	26
Richmond	1	28	1	1	7	16	4	29
Hounslow	3	40	7	2	21	11	2	43
Hillingdon	2	38	3	5	19	10	3	40
Ealing	12	73	4	10	32	29	10	85
Brent	9	73	5	6	39	24	8	82
Harrow	3	27	1	5	9	7	8	30
Barnet	5	78	4	5	27	34	13	83
Haringey	2	71	9	4	26	20	14	73
Enfield	10	67	11	3	29	20	14	77
<b>Total outer London</b>	<b>72</b>	<b>957</b>	<b>87</b>	<b>75</b>	<b>356</b>	<b>369</b>	<b>142</b>	<b>1,029</b>
<b>% Greater London</b>	<b>49%</b>	<b>44%</b>	<b>45%</b>	<b>39%</b>	<b>38%</b>	<b>50%</b>	<b>49%</b>	<b>44%</b>
<b>Total Greater London</b>	<b>146</b>	<b>2,197</b>	<b>193</b>	<b>192</b>	<b>930</b>	<b>739</b>	<b>289</b>	<b>2,343</b>

Table 7 shows bus occupant casualties by borough, casualty class and age group. 51% of all bus driver casualties and 56% of all bus passenger casualties were injured in inner London.

In regard to age, the majority of casualties in most age bands were injured in inner London, while the 60 years and over group was split equally between inner and outer London.

**Table 8a: Bus occupant casualties by road class, severity and severity ratio in Greater London 2003**

First road class	Severity of casualty			Total	% of total	Severity ratio
	Fatal	Serious	Slight			
Motorway	0	0	5	5	0.2%	0%
A	5	158	1,656	1,819	77.6%	9%
B	0	24	171	195	8.3%	12%
C	0	26	190	216	9.2%	12%
Unclassified	0	10	98	108	4.6%	9%
<b>Total</b>	<b>5</b>	<b>218</b>	<b>2,120</b>	<b>2,343</b>	<b>100.0%</b>	<b>10%</b>

**Table 8b : Bus occupant casualties by highway authority, severity and severity ratio in Greater London 2003**

Highway authority	Severity of casualty			Total	% of total	Severity ratio
	Fatal	Serious	Slight			
TLRN	2	47	630	679	29.0%	7%
Highways Agency Road	0	0	5	5	0.2%	0%
Borough Road	3	171	1485	1,659	70.8%	10%
<b>Total</b>	<b>5</b>	<b>218</b>	<b>2,120</b>	<b>2,343</b>	<b>100.0%</b>	<b>10%</b>

## The Streets

Table 8a shows bus occupant casualties by road class and severity. Nearly 78% of bus occupants were injured on 'A' class roads, 14% on 'C' class and unclassified roads and 8% on 'B' class roads. The highest casualty severity ratio (12%) was recorded on both 'B' and 'C' class roads, with 'A' class and unclassified roads both having a severity ratio of 9%.

The majority of bus occupant casualties (61%) were injured on two-lane, single carriageway roads. 97% of casualties occurred on roads with a 30mph speed limit. A 10% severity ratio was recorded against these casualties.

71% of bus occupant casualties were injured at or within 20m of a junction. Of these, 57% were injured at 'T' or staggered junctions and 23% at crossroads. Of those injured at a junction, 56% occurred where the junction control was 'Give Way' and 35% at a

junction controlled by automatic traffic signals.

Table 8b shows bus occupant casualties by highway authority and severity. The majority (71%) of bus occupant casualties were injured on borough roads, these casualties also displayed the highest severity ratio (10%). While only 29% of casualties occurred on the Transport for London Road Network (TLRN), 40% of fatalities occurred on those roads, although the numbers are very small.

## Road surface/weather

Table 9 shows bus occupant casualties by road surface condition and severity. Nearly 90% of all bus occupant casualties (92% of KSI casualties) were injured on a dry road surface and 9.5% (7% KSI) on a wet road. Less than 1% of casualties were injured on other road surfaces.

92% of bus occupant casualties were injured in fine weather conditions, with a resultant severity ratio of 10%. Just under 6% were injured in the rain.

**Table 9: Bus occupant casualties by road surface condition and severity in Greater London 2003**

Road Surface Condition	Severity of casualty			Total	% of total	Severity ratio
	Fatal	Serious	Slight			
Dry	5	200	1,899	2,104	89.8%	10%
Wet	0	16	210	226	9.6%	7%
Snow	0	0	3	3	0.1%	0%
Frost/Ice	0	2	5	7	0.3%	29%
Flood	0	0	1	1	0.0%	0%
Oil/diesel	0	0	2	2	0.1%	0%
<b>Total</b>	<b>5</b>	<b>218</b>	<b>2,120</b>	<b>2,343</b>	<b>100.0%</b>	<b>10%</b>

### When?

Figures 9, 10 and 11 show the number of bus occupant casualties by time of day, day of week and month in Greater London, 2003. They also indicate the proportions occurring during the hours of daylight and darkness.

### Time of day

Nearly three quarters (73%) of bus occupant casualties were injured between 9am and 6pm. The highest numbers occurred between 12 noon and 1pm (10%), followed by a second peak between 3pm and 4pm (9%). By contrast, the 'low' period for bus occupant casualties was between midnight and 7am, which accounted for just 3% of the total. It is interesting to see that there are no peaks in the traditionally accepted morning and evening peak travel periods.

In terms of bus passenger kilometres and the number of journeys made, the greatest percentage increases in 2003/04 have been in the afternoon peak and evening. Night bus usage has also been

growing steadily and accounted for 5% of bus journeys in 2003/04.

82% of bus occupant casualties occurred during daylight hours, compared to 18% in hours of darkness.

### Day of week

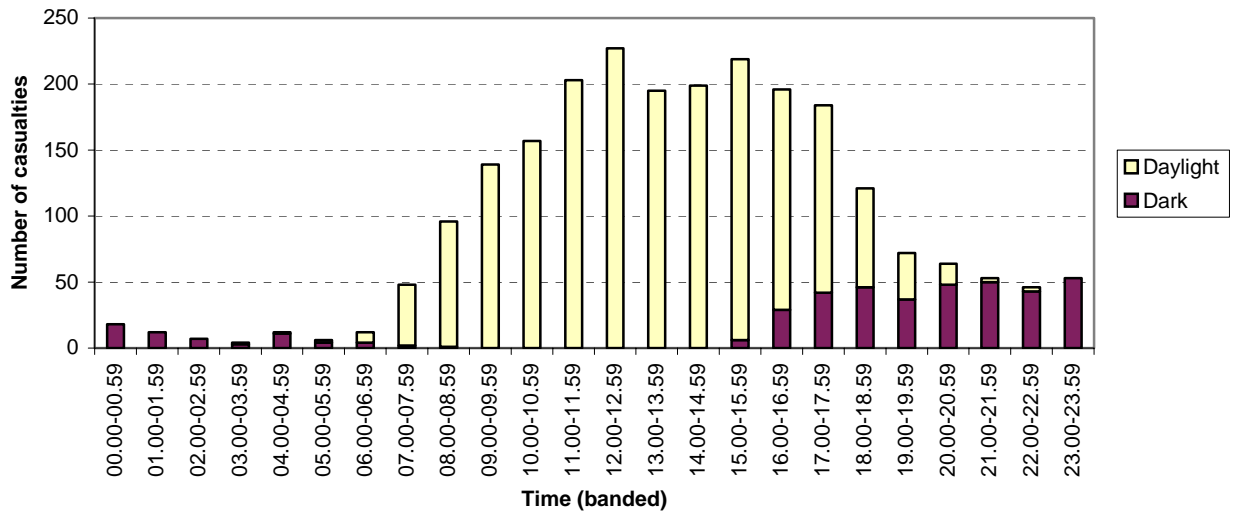
79% of bus occupant casualties were injured between Monday and Friday, an average of nearly 16% per day, with very little variation between individual days. 14% of casualties occurred on a Saturday, almost as high as weekdays, and 7% on a Sunday.

The highest proportion of bus occupant casualties injured during the hours of darkness (28%) occurred on a Sunday.

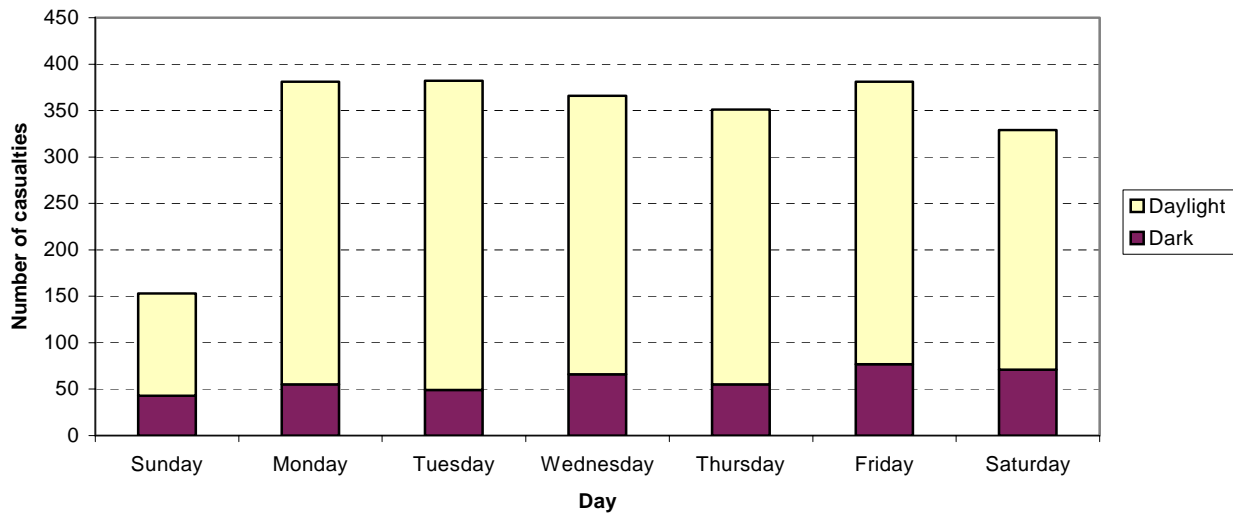
### Month

The highest number of bus occupant casualties were recorded in September (11%), and the lowest in January (5%). There was very little variation in casualty numbers between April and October, with casualties averaging 9.5% of the total in each of these months.

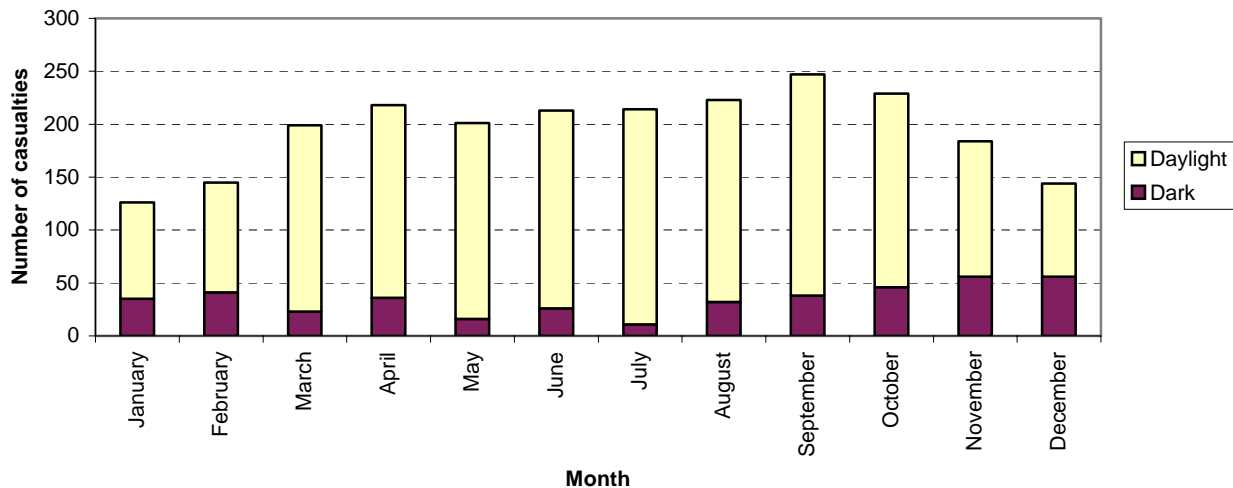
**Fig 9 : Bus occupant casualties by time and light conditions in Greater London 2003**



**Fig 10: Bus occupant casualties by day and light conditions in Greater London 2003**



**Fig 11: Bus occupant casualties by month and light conditions in Greater London 2003**



**Table 10: Bus passenger casualties by activity and severity in Greater London 2003**

	Fatal	Serious	Slight	Total	% of total	Severity ratio
Boarding bus	0	24	173	197	9%	12%
Alighting bus	2	37	203	242	11%	16%
Standing on bus	3	81	772	856	39%	10%
Seated on bus	0	56	846	902	41%	6%
<b>Total</b>	<b>5</b>	<b>198</b>	<b>1,994</b>	<b>2,197</b>	<b>100%</b>	<b>9%</b>

### Passenger action

Table 10 shows bus passenger casualties by passenger action and severity. The greatest proportion of passengers were injured while seated (41%) or standing (39%) on the bus, however the highest severity ratio (16%) was recorded for those alighting. In terms of KSI casualties, the greatest proportion (41%) were injured while standing on the bus.

### Vehicle manoeuvre

Table 11 shows bus occupant casualties by vehicle manoeuvre and severity. The greatest number (43%) of bus casualties were injured when the bus was 'going ahead'. The second most common vehicle manoeuvre involved the bus stopping (21%), followed by the bus starting (12%).

**Table 11: Bus occupant casualties by vehicle manoeuvre, severity and severity ratio in Greater London 2003**

Vehicle manoeuvre	Severity of casualty			Total	% of total	Severity ratio
	Fatal	Serious	Slight			
Reversing	0	0	1	1	0%	0%
Parked	1	22	201	224	10%	10%
Going Ahead But Held Up	0	10	67	77	3%	13%
Stopping	0	36	465	501	21%	7%
Starting	0	33	243	276	12%	12%
Turning Left	0	6	43	49	2%	12%
Waiting to Turn Left	0	0	5	5	0%	0%
Turning Right	0	8	70	78	3%	10%
Waiting to Turn Right	0	0	4	4	0%	0%
Changing Lane To Left	0	0	7	7	0%	0%
Changing Lane To Right	0	0	3	3	0%	0%
Overtaking Moving Veh Offside	0	0	1	1	0%	0%
Overtaking Stat Veh Offside	0	6	25	31	1%	19%
Overtaking Nearside	0	0	1	1	0%	0%
Going Ahead Left Bend	0	3	24	27	1%	11%
Going Ahead Right Bend	0	5	37	42	2%	12%
Going Ahead Other	4	89	923	1,016	43%	9%
<b>Total</b>	<b>5</b>	<b>218</b>	<b>2,120</b>	<b>2,343</b>	<b>100%</b>	<b>10%</b>



## Contributory factors

Table 12 shows bus occupant casualties by the main accident and vehicle contributory factors in Greater London in 2003.

The contributory factor variable is highly subjective, but gives an indication of the main factors involved in the collision. The accident contributory factor could apply to any of the vehicles involved in the collision and has been deemed by the Police to be the overriding factor in the collision. The vehicle contributory factor relates directly to the bus/coach.

The top accident contributory factor, cited for 26.5% of bus occupant casualties, was 'swerved/braked to avoid having an accident'. The next three highest factors all relate directly to vehicle passenger action – 'other passenger factor' (14.6%), 'alighting from PSV' (7.1%) and 'boarding PSV' (6.1%).

The top vehicle contributory factor (35.2%) was 'going ahead normally', i.e. the actual vehicle (bus or coach) was not deemed to have caused the collision in over a third of cases where a bus occupant was injured.

**Table 12: Bus occupant casualties by most common accident and vehicle contributory factors in Greater London 2003**

<b>Accident Contributory Factor</b>	<b>No. of Casualties</b>	<b>% of total</b>
238 Swerved/braked to avoid having an accident	620	26.5%
399 Other passenger factor	341	14.6%
301 Alighting from PSV	166	7.1%
300 Boarding PSV	143	6.1%
224+225 Going too fast having regard to road environment or other road users	128	5.5%
213 Stopping	93	4.0%
216 Driving too close to the vehicle in front	85	3.6%
214 Starting	84	3.6%
210 Turning left	68	2.9%
207 Disobeyed STOP or GIVE WAY sign or marking	66	2.8%
209 Turn right injudiciously	64	2.7%
221 Changing lane injudiciously	62	2.6%
204 Disobeyed ATS	53	2.3%
0 Factor unknown	52	2.2%
219 Overtaking on offside injudiciously	36	1.5%
223 Negligently opening or closing door	28	1.2%
304 Fell off platform (not boarding or alighting)	26	1.1%
<b>Vehicle Contributory Factor</b>	<b>No. of Casualties</b>	<b>% of total</b>
601 Going ahead normally	825	35.2%
238 Swerved/braked to avoid having an accident	554	23.6%
600 Parked or stationary	296	12.6%
224+225 Going too fast having regard to road environment or other road users	180	7.7%
214 Starting	83	3.5%
213 Stopping	63	2.7%
216 Driving too close to the vehicle in front	61	2.6%
603 Turning normally	58	2.5%
0 Factor unknown	49	2.1%
299 Other driver/rider factor	42	1.8%
223 Negligently opening or closing door	20	0.9%
219 Overtaking on offside injudiciously	18	0.8%
209 Turn right injudiciously	17	0.7%
207 Disobeyed STOP or GIVE WAY sign or marking	13	0.6%
217 Driving too close to the vehicle alongside	10	0.4%

## All casualties arising from collisions involving buses/coaches

This fact sheet has looked exclusively at bus occupant casualties, of which there were 2,343 arising from 1,931 collisions in 2003. There were however 3,093 collisions involving buses/coaches, which resulted in a total of 3,752 casualties.

Table 13 shows all casualties resulting from collisions in which buses/coaches

were involved in Greater London, 2003. It must be emphasised that not all casualties were injured by the bus/coach, but may have been injured by another vehicle in the collision.

The highest severity ratios were recorded against powered two wheelers (23%) and pedestrians (19%), illustrating the vulnerability of these road users to serious injury when involved in collisions with buses/coaches.

**Table 13: All casualties resulting from collisions in which a bus/coach was involved by mode of travel and severity in Greater London 2003**

Casualty mode of travel	Severity of casualty			Total	% of total	Severity ratio
	Fatal	Serious	Slight			
Pedestrian	10	106	495	611	16%	19%
Pedal Cycle	1	16	135	152	4%	11%
Powered 2 Wheeler	1	22	79	102	3%	23%
Car	3	41	431	475	13%	9%
Taxi	0	1	14	15	0%	7%
Bus Or Coach	5	218	2,120	2,343	62%	10%
Goods Vehicle	1	4	37	42	1%	12%
Other Vehicle	0	0	12	12	0%	0%
<b>Total</b>	<b>21</b>	<b>408</b>	<b>3,323</b>	<b>3,752</b>	<b>100%</b>	<b>11%</b>

**Table 14: Comparative casualty rates by vehicular mode of travel in Greater London 2003**

Vehicular mode of travel	Casualty severity					Estimated vehicle kilometres per year * (100 million)	Casualty rates per 100 million vehicle kilometres			Estimated average vehicle occupancy †	Casualty rates per 100 million person kilometres		
	Fatal	Serious	Slight	Total	Fatal & Serious		All cas	KSI cas	Slight cas		All cas	KSI cas	Slight cas
Pedal cyclist	19	421	2,616	3,056	440	5.422	563.6	81.1	482.5	1.0	563.6	81.1	482.5
Powered two-wheeler	63	1,089	5,317	6,469	1,152	8.616	750.8	133.7	617.1	1.0	750.8	133.7	617.1
Car & taxi	63	1,678	16,614	18,355	1,741	263.348	69.7	6.6	63.1	1.5	46.5	4.4	42.1
Bus or coach	5	218	2,120	2,343	223	5.823	402.3	38.3	364.1	14.7	27.4	2.6	24.8
Goods vehicle	3	84	730	817	87	49.869	16.4	1.7	14.6	1.2	13.7	1.5	12.2
<b>Total#</b>	<b>153</b>	<b>3,490</b>	<b>27,397</b>	<b>31,040</b>	<b>3,643</b>	<b>333.079</b>	<b>93.2</b>	<b>10.9</b>	<b>82.3</b>				

# excluding pedestrians and other vehicles.

\* Source: DfT National Road Traffic Survey data

† Estimates by TfL Network Performance

## Comparative casualty rates by vehicular mode of travel

Table 14 shows comparative casualty rates by vehicular mode of travel, for vehicle types where vehicle kilometre data is available in Greater London, 2003. This gives a good indication of the relative risk to occupants of different vehicle types.

Looking at casualty rates per 100 million *vehicle* kilometres, buses and coaches were the vehicular mode with the third highest rate (402.3 for all casualties, 38.3 for KSI's and 364.1 for slight casualties) after powered two-wheelers and pedal cyclists. This compares to a rate for cars and taxis of 69.7 for all casualties, 6.6 for

KSI's and 63.1 for slight casualties. What this rate does not take into account however, is the relative numbers of vehicle occupants per vehicle.

When an estimated average vehicle occupancy is built into the calculation and the casualty rate per 100 million *person* kilometres is compared, the rate for buses/coaches falls to just 27.4 for all casualties, 2.6 for KSI's and 24.8 for slight casualties. This is a more meaningful comparison for the risk to bus occupants compared with other vehicle modes, and shows buses/coaches to be a safe mode of travel per person kilometre, relative to other modes.

## Reference Documents

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3. Radial Traffic Movements in London 1971 – 2003 TfL (unpublished)
4. London Travel Report 2004 – TfL  
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5. DfT National Road Traffic Survey data