

### Better Routes and Places Directorate Topic Factsheet 2011- 1

September 2011

## Pedal cyclist collisions and casualties in Greater London

This factsheet looks into the scale and nature of road traffic collisions resulting in injury to pedal cyclists in the Greater London area. It gives an overview of pedal cyclist (P/C) casualties for the period 1986 to 2010 and then looks in detail at the profile of the casualties and factors relating to the collisions that occurred in 2010 (the latest year for which finalised data are available at the time of writing).

It provides background information in relation to the Government and Mayor for London's targets to reduce road casualties by the year 2010. The previous targets were reviewed in 2006 and included a 50% reduction in the number of pedal cyclists killed or seriously injured (KSI) by 2010 from a baseline of the average number of casualties for 1994-98. This target has not been met, although P/C KSI collisions have reduced by 18%.

The data provided is for personal injury road traffic collisions that occurred on the public highway and were reported to the police in accordance with the *Stats 19* national reporting system. The pedal cycle category applies to cycles being ridden in the carriageway or on a cycleway or pavement and also applies to toy cars and tricycles in the carriageway. The category also includes electrically assisted pedal cycles.

### Key facts

- 17% of all collisions in Greater London in 2010 resulted in injury to pedal cyclists, who in turn represented 14% of all casualties.
- P/C KSI casualties accounted for 16% of all KSI casualties in 2010.
- P/C KSIs have fallen by 18% between the 1994-98 average and 2010; all P/C casualties have fallen by 9%.
- Over three quarters (78%) of P/C casualties in 2010 were male.
- Half (50%) of P/C casualties of known age injured in 2010 were aged between 25 and 39 years.
- In 2010, 65% of P/C casualties were injured in inner London boroughs.
- Between 2000 and 2010, cycling on London's main roads (TLRN) has increased by over 150%.

## Annual Trends 1986 to 2010

Table 1 and Figure 1 show the number of P/C casualties by year, severity and casualty class in Greater London from 1986 to 2010.

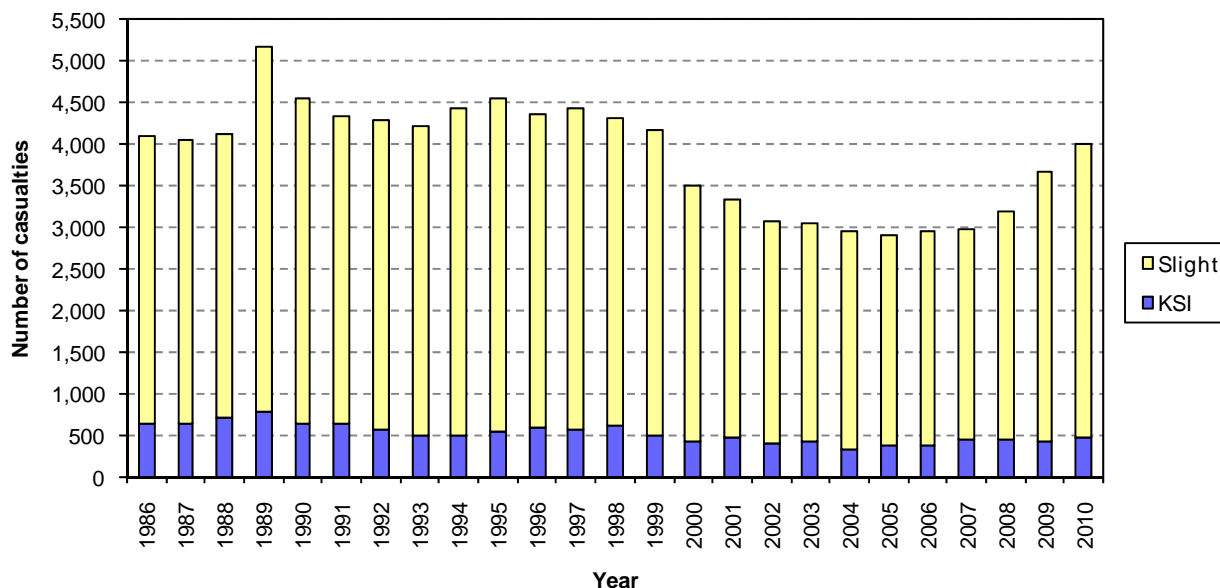
**Table 1: Pedal cyclist casualties by year and severity in Greater London 1986 to 2010**

Year of accident	Severity of casualty				Total	Severity ratio
	Collisions	Fatal	Serious	Slight		
1986	4,062	18	624	3,443	4,085	16%
1987	4,014	25	623	3,388	4,036	16%
1988	4,102	24	679	3,425	4,128	17%
1989	5,142	33	752	4,379	5,164	15%
1990	4,512	19	625	3,895	4,539	14%
1991	4,316	17	633	3,693	4,343	15%
1992	4,252	18	546	3,722	4,286	13%
1993	4,177	18	493	3,695	4,206	12%
1994	4,397	15	488	3,924	4,427	11%
1995	4,517	15	527	3,997	4,539	12%
1996	4,325	20	577	3,753	4,350	14%
1997	4,401	12	566	3,852	4,430	13%
1998	4,290	12	602	3,702	4,316	14%
<b>1994 to 1998 average</b>	<b>4,386</b>	<b>15</b>	<b>552</b>	<b>3,846</b>	<b>4,412</b>	<b>13%</b>
1999	4,147	10	482	3,682	4,174	12%
2000	3,482	14	408	3,084	3,506	12%
2001	3,300	21	444	2,857	3,322	14%
2002	3,050	20	394	2,648	3,062	14%
2003	3,039	19	421	2,616	3,056	14%
2004	2,933	8	332	2,620	2,960	11%
2005	2,881	21	351	2,523	2,895	13%
2006	2,941	19	373	2,566	2,958	13%
2007	2,953	15	446	2,509	2,970	16%
2008	3,180	15	430	2,757	3,202	14%
2009	3,657	13	420	3,236	3,669	12%
2010	3,986	10	457	3,540	4,007	12%
<b>% change 1986 to 2010</b>	<b>-2%</b>	<b>-44%</b>	<b>-27%</b>	<b>3%</b>	<b>-2%</b>	<b>-</b>
<b>% change 1994-98 average to 2010</b>	<b>-9%</b>	<b>-32%</b>	<b>-17%</b>	<b>-8%</b>	<b>-9%</b>	<b>-</b>
<b>% change 2009 to 2010</b>	<b>9%</b>	<b>-23%</b>	<b>9%</b>	<b>9%</b>	<b>9%</b>	<b>-</b>

P/C casualties have fluctuated throughout this period, reaching a peak of 5,164 in 1989 and falling to a low of 2,895 in 2005 (a reduction of 44%). Numbers have been increasing since this point however, rising to 4,007 in 2010. Overall P/C casualties have fallen by 2% between 1986 and 2010.

There have been reductions in both fatal and serious P/C casualties between 1986 and 2010, with fatalities falling by 44% and serious injuries by 27% (KSIs by 27%). However slight casualties increased by 3%. Overall, collisions resulting in injury to one or more pedal cyclist fell by 2% during this period.

**Fig. 1: Pedal cyclist casualties by year and severity in Greater London 1986 to 2010**



Comparing 2010 with the 1994-98 average, all P/C casualties fell by 9%, fatalities by 32%, serious injuries by 17% and slight injuries by 8%. P/C KSI casualties fell by 18% overall. KSI numbers increased from a low of 340 in 2004 to 461 in 2007 but fell in 2008 to 445 and 433 in 2009, increasing again to 467 in 2010.

Comparing 2010 with 2009, P/C casualties rose by 9% (from 3,669 to 4,007). There was a rise in both serious casualties (from 420 to 457) and slight casualties (from 3,236 to 3,540) of 9%, while fatal casualties fell by 23% (from 13 to 10), resulting in an overall KSI casualty increase of 8%. Collisions resulting in one or more pedal cycle casualty rose by 9% between 2009 and 2010.

The severity ratio (the percentage of fatal and serious injuries to all injuries) has fluctuated throughout the period 1986 to 2010, peaking at 17% in 1988 and falling to 11% in 1994 and 2004. Following this low it rose to 16% in 2007, but fell to 12% in 2010.

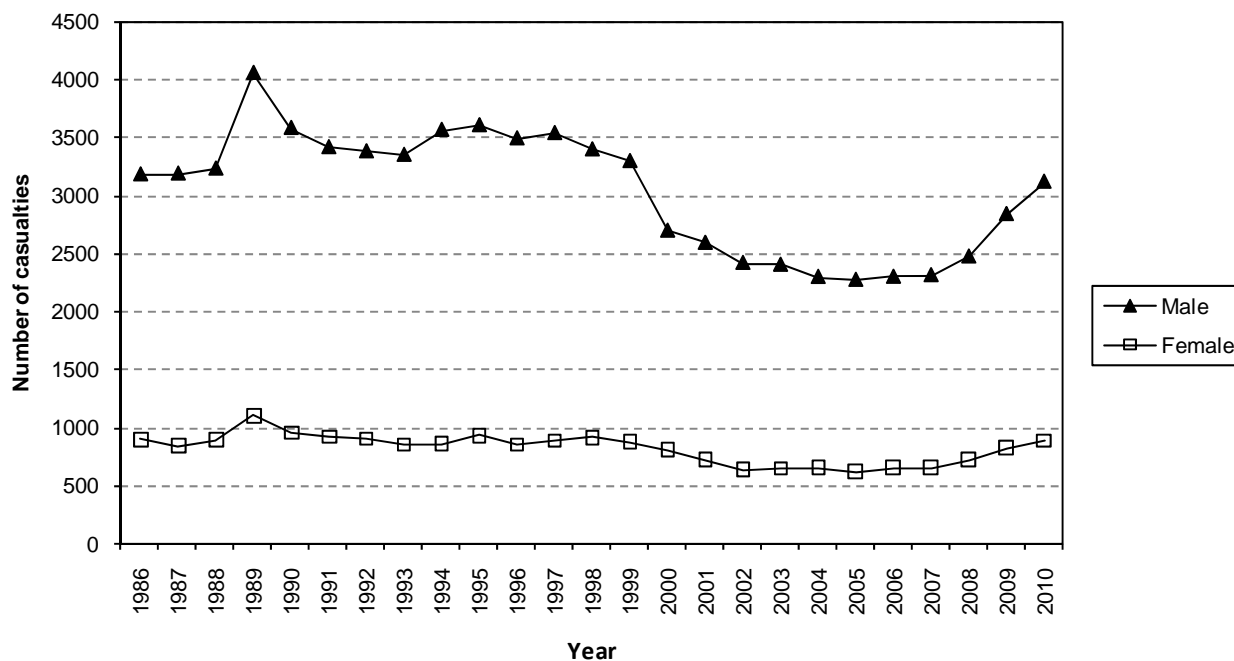
### Gender

Figure 2 shows P/C casualties by gender in Greater London from 1986 to 2010. The greatest proportion of P/C casualties was male, with an average of 79% per year over this period. The male-female split has remained fairly constant throughout this time.

Both male and female P/C casualties have shown a general downward trend between 1989 and 2007, although year on year fluctuations are more marked amongst male casualties. Numbers of casualties for both genders have shown increases since 2007.

Between 1986 and 2010 both male and female P/C casualties decreased by 2%. Males showed the largest decrease between the 1994-98 average and 2010, falling by 11% compared to females who fell by 1%. P/C casualties of both genders rose between 2009 and 2010, males showed an increase of 10% and females of 7%.

Fig. 2: Pedal cyclist casualties by gender in Greater London 1986 to 2010



## Age

Figure 3 and Table 2 show P/C casualties by year and age band, 1986 to 2010. While the proportion of casualties aged 60 years and over has remained constant throughout this period, the proportions in the under 16, 16-24 and 25-59 year groups have shown marked changes.

The percentage of casualties in the 60 years and over age band has remained quite constant over this period, averaging 3% per year. The number of casualties in this group reached a peak of 185 in 1989 and fell to a low of 76 in 2007. The numbers of casualties rose over the next two years but levelled in 2010 with 100 P/C casualties aged 60 years and over. P/C casualties in this group have fallen by 36% between 1986 and 2010, by 23% between the 1994-98 average and 2010, and by 1% between 2009 and 2010.

On average 16% of P/C casualties were under the age of 16 years; however numbers in this group have been decreasing steadily. In 1986 under 16s accounted for 21% of all P/C casualties compared to just 5% in 2010, with casualty numbers falling by 75% during this period. Casualties in this group also decreased by 72% between the 1994-98 average and 2010. However, from a low in 2007 of 209 casualties, the numbers rose in 2008 and 2009 but have again fallen with a 19% decrease between 2009 and 2010.

In the 16-24 year group the percentage of casualties fell from 30% (1,211 casualties) in 1986 to 14% (570 casualties) in 2010. Casualties in this group decreased by 53% between 1986 and 2010 and by 32% between the 1994-98 average and 2010. However, casualties in this group have been rising since 2006, with an increase of 18% between 2009 and 2010. Casualties in this group are now at their highest (570) since 1999.

The situation in the 25-59 year age group shows the percentage of casualties rising from 38% in 1986 to 72% in 2010. Numbers in this group have increased by 85% (1,562 to 2,890) between 1986 and 2010, by 22% between the 1994-98 average and 2010 and by 11% between 2009 and 2010.

Fig. 3: Pedal cyclist casualties by year and age (banded) in Greater London 1986 to 2010

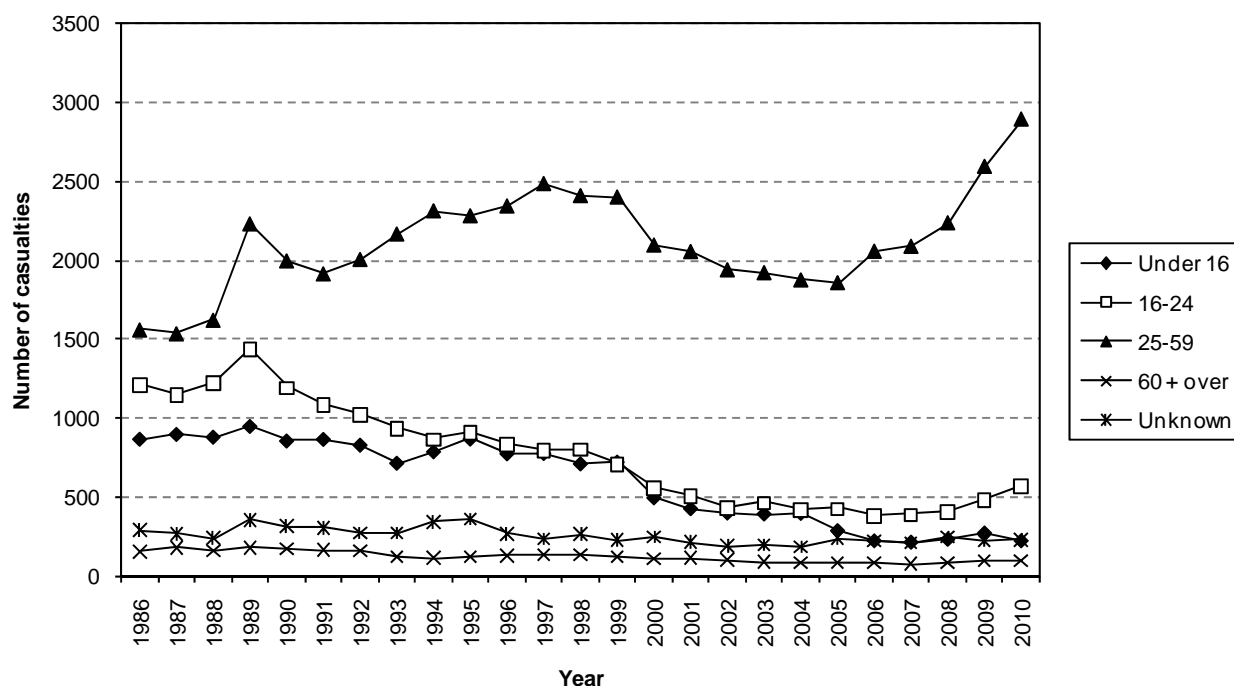


Table 2: Pedal cyclist casualties by year and age (banded) in Greater London 1986 to 2010

	Casualty age banded					Total	% aged < 16	% aged 16-24	% aged 25-59	% aged 60+
	Under 16	16-24	25-59	60& over	Unknown					
1986	866	1,211	1,562	157	289	4,085	21%	30%	38%	4%
1987	897	1,154	1,538	179	268	4,036	22%	29%	38%	4%
1988	879	1,225	1,623	163	238	4,128	21%	30%	39%	4%
1989	948	1,442	2,230	185	359	5,164	18%	28%	43%	4%
1990	855	1,196	1,997	175	316	4,539	19%	26%	44%	4%
1991	865	1,090	1,915	166	307	4,343	20%	25%	44%	4%
1992	828	1,021	2,006	161	270	4,286	19%	24%	47%	4%
1993	713	934	2,166	124	269	4,206	17%	22%	51%	3%
1994	786	867	2,312	118	344	4,427	18%	20%	52%	3%
1995	867	908	2,281	123	360	4,539	19%	20%	50%	3%
1996	773	833	2,343	133	268	4,350	18%	19%	54%	3%
1997	775	800	2,484	140	231	4,430	17%	18%	56%	3%
1998	709	802	2,408	134	263	4,316	16%	19%	56%	3%
<b>1994 to 1998 average</b>	<b>782</b>	<b>842</b>	<b>2,366</b>	<b>130</b>	<b>293</b>	<b>4,412</b>	<b>18%</b>	<b>19%</b>	<b>54%</b>	<b>3%</b>
1999	720	708	2,399	122	225	4,174	17%	17%	57%	3%
2000	492	556	2,097	114	247	3,506	14%	16%	60%	3%
2001	423	510	2,056	118	215	3,322	13%	15%	62%	4%
2002	395	433	1,941	105	188	3,062	13%	14%	63%	3%
2003	389	463	1,923	90	191	3,056	13%	15%	63%	3%
2004	393	421	1,877	85	184	2,960	13%	14%	63%	3%
2005	283	426	1,860	88	238	2,895	10%	15%	64%	3%
2006	218	379	2,058	83	220	2,958	7%	13%	70%	3%
2007	209	389	2,089	76	207	2,970	7%	13%	70%	3%
2008	228	405	2,237	87	245	3,202	7%	13%	70%	3%
2009	268	485	2,592	101	223	3,669	7%	13%	71%	3%
2010	218	570	2,890	100	229	4,007	5%	14%	72%	2%
<b>% change 1986 to 2010</b>	<b>-75%</b>	<b>-53%</b>	<b>85%</b>	<b>-36%</b>	<b>-21%</b>	<b>-2%</b>	-	-	-	-
<b>% change 1994-98 average to 2010</b>	<b>-72%</b>	<b>-32%</b>	<b>22%</b>	<b>-23%</b>	<b>-22%</b>	<b>-9%</b>	-	-	-	-
<b>% change 2009 to 2010</b>	<b>-19%</b>	<b>18%</b>	<b>11%</b>	<b>-1%</b>	<b>3%</b>	<b>9%</b>	-	-	-	-

# Pedal cycle usage in Greater London

In order to gain a clearer picture of the extent of the P/C collision problem in London, it is important to look at casualty numbers in relation to pedal cycle usage. Surveys of radial traffic movements in London are carried out annually or bi-annually which give useful indicators of the change in travel over time. These surveys measure 24-hour radial traffic flows crossing the Greater London boundary and inner and central London cordons.

**Map 1: Location of London traffic cordons**



**Fig. 4: Radial 24 hour pedal cycle movements in London, both directions combined, 1980-2010**

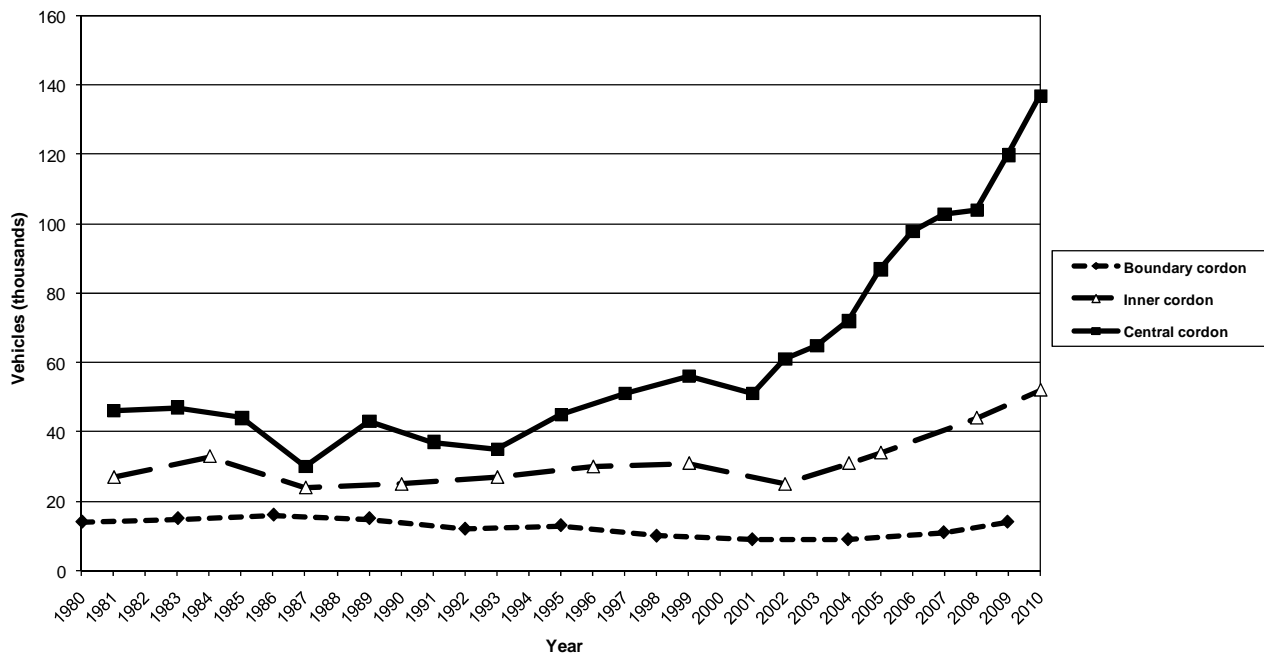


Figure 4 shows the radial cordons, combined direction, 24-hour pedal cycle movements (rounded) between 1980 and 2010 (boundary flows only up to 2009). Flows across the boundary cordon have shown the least amount of change, rising from 14,000 in 1980 to a peak of 16,000 in 1986 and then falling to a low of 9,000 in 2001 and 2004, then rising again to 14,000 in 2009.

Pedal cycle movements increased across the inner cordon by 93% between 1981 and 2010. Following a steady rise from a low of 24,000 in 1987 to a peak of 31,000 in 1999, numbers fell to 25,000 in 2002, before rising to a high of 52,000 in 2010.

The most dramatic change in pedal cycle movements has been across the central London cordon, with an increase of 198% between 1981 and 2010. This rise in usage has been particularly marked over the last nine years, with numbers increasing from 51,000 in 2001 to 137,000 in 2010.

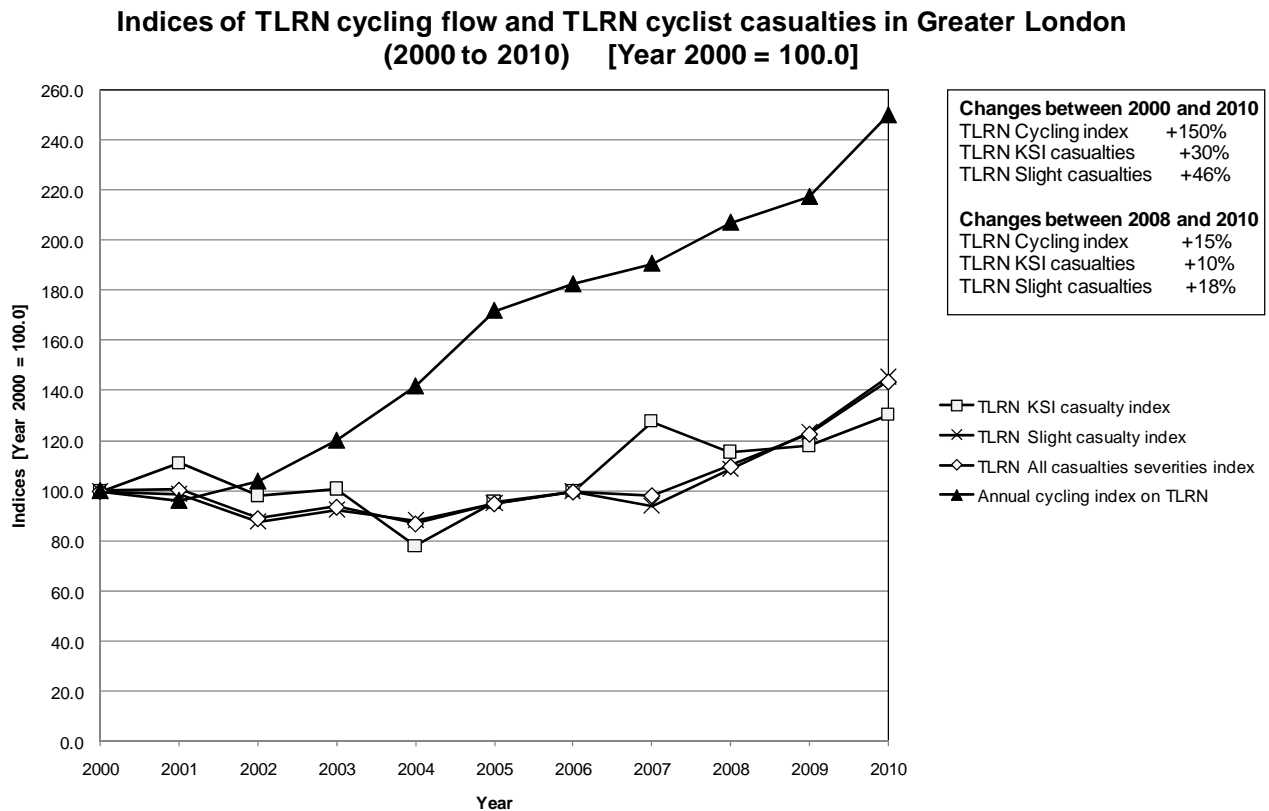


Figure 5 shows indices of cycling flow and P/C casualties, including slight and KSI casualties, on the Transport for London Road Network (TLRN) 2000 to 2010. The index for each of the data variables has been set to 100 for whatever their values were in the year 2000, so that the year on year change can be measured on a comparable basis.

This chart clearly illustrates the rapid growth in cycle flow on the TLRN, with the cycling index increasing by 150% between 2000 and 2010 and by 15% between 2009 and 2010. While cycle flow has consistently increased, P/C casualties, particularly KSIs, have not increased at the same rate.

## Pedal cyclist casualties in Greater London in 2010

The following section provides a more detailed analysis of P/C casualties in Greater London in 2010. This is the most recent year for which finalised data are available.

### How many and who?

During 2010 there were 24,105 personal injury road traffic collisions reported to the police in the Greater London area. Of these collisions, 3,986 (17%) involved injury to pedal cyclists and resulted in 4,007 P/C casualties. Pedal cyclists represented 14% of the total casualties in Greater London in 2010. By comparison, in Great Britain as a whole, P/C casualties accounted for 8% of all casualties in 2010. This difference may reflect the popularity of cycling as a mode of travel in London.

### Severity and gender

Table 3 shows P/C casualties by severity and gender in Greater London in 2010. The majority 3,540 (88%) of P/C casualties were slightly injured, with almost 12% suffering serious injury and less than 1% being killed. P/C casualties killed or seriously injured accounted for 16% of all road user KSIs in Greater London in 2010.

Over three quarters (78%) of P/C casualties were male, compared to 22% female. This ratio was the same for both serious and slight casualties (78% male, 22% female), with 60% of fatal casualties being male compared to 40% female. The severity ratio is the same for both males (12%) and females (12%) in Greater London.

**Table 3: Pedal cyclist casualties by gender, severity & severity ratio in Greater London 2010**

	Severity of casualty			Total	Severity ratio
	Fatal	Serious	Slight		
Male	6	358	2,756	3,120	12%
Female	4	99	784	887	12%
<b>Total</b>	<b>10</b>	<b>457</b>	<b>3,540</b>	<b>4,007</b>	<b>12%</b>

### Age and gender

Table 4 and Figure 6 show the number of P/C casualties by five-year age bands, gender and severity in Greater London in 2010. 71% of P/C casualties of known age were aged between 20 and 44 years, with 50% between the ages of 25 and 39 years. The highest numbers for both male and female casualties occurred in the 25-29 and 30-34 year age bands, which together accounted for more than one third (36%) of P/C casualties of known age. There were more males than females injured in all age bands.

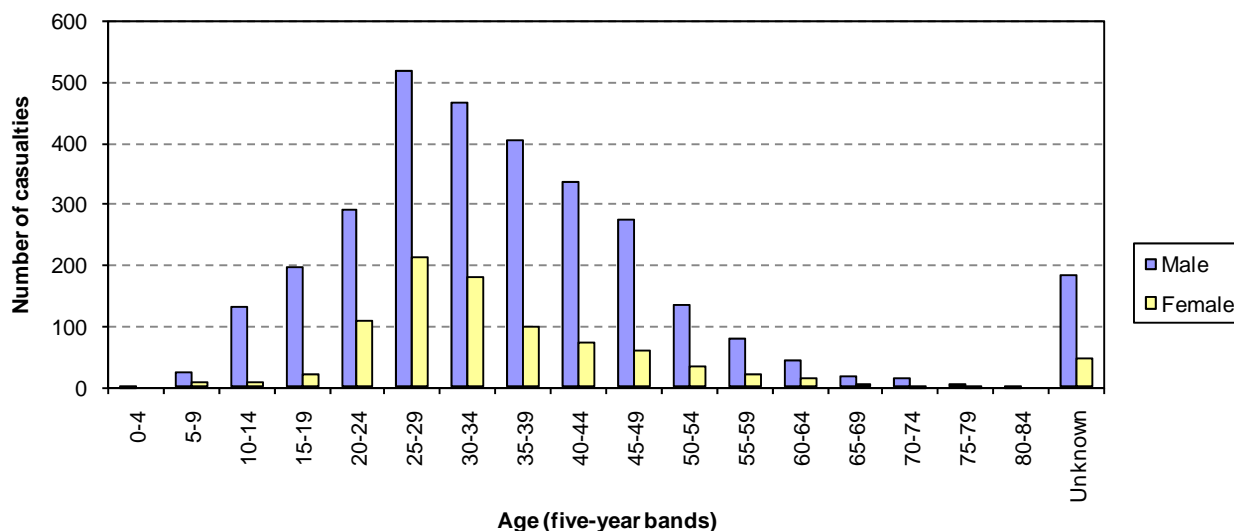
The highest severity ratio (38%) was found in the age band 65-69. This is likely due in part to the low numbers of casualties in this group, but also highlights the vulnerability of elderly cyclists to serious injury.



**Table 4: Pedal cyclist casualties by age-band, gender, severity and severity ratio in Greater London 2010**

Casualty age	Casualty gender		Severity of casualty			Total	% of known age	Severity ratio
	Male	Female	Fatal	Serious	Slight			
0-4	2	0	0	0	2	2	0.1%	0%
5-9	24	7	0	3	28	31	0.8%	10%
10-14	131	9	0	17	123	140	3.7%	12%
15-19	196	19	0	20	195	215	5.7%	9%
20-24	290	110	1	43	356	400	10.6%	11%
25-29	520	212	3	76	653	732	19.4%	11%
30-34	466	179	2	73	570	645	17.1%	12%
35-39	406	100	0	56	450	506	13.4%	11%
40-44	335	73	0	43	365	408	10.8%	11%
45-49	273	59	2	41	289	332	8.8%	13%
50-54	135	32	1	28	138	167	4.4%	17%
55-59	78	22	0	17	83	100	2.6%	17%
60-64	43	13	0	5	51	56	1.5%	9%
65-69	17	4	0	8	13	21	0.6%	38%
70-74	14	2	1	0	15	16	0.4%	6%
75-79	5	1	0	1	5	6	0.2%	17%
80-84	1	0	0	0	1	1	0.0%	0%
<b>Total (age known)</b>	<b>2,936</b>	<b>842</b>	<b>10</b>	<b>431</b>	<b>3,337</b>	<b>3,778</b>	<b>100%</b>	<b>12%</b>
Total (age unknown)	184	45	0	26	203	229	-	11%
<b>Total</b>	<b>3,120</b>	<b>887</b>	<b>10</b>	<b>457</b>	<b>3,540</b>	<b>4,007</b>	<b>-</b>	<b>12%</b>

**Fig. 6: Pedal cyclist casualties by age-band and gender in Greater London 2010**



## Where?

Table 5 shows the number of P/C casualties by borough, severity and percentage change in KSI casualties in 2010 compared to the 1994-98 average.

Just under two thirds (65%) of P/C casualties were injured on roads in inner London boroughs. This included four fifths (80%) of fatalities, and 65% of both serious and slight injuries. The severity ratio was the same in both inner and outer London (12%).

Regarding the 2010 P/C casualty reduction target, KSI casualties in outer London showed a reduction of 41% in 2010 on the 1994-98 average, while numbers in inner London increased by 4%. This may be a reflection of the recent growth in cycling, particularly in central and inner London.

**Table 5: Pedal cyclist casualties by borough, severity and KSI percentage change in 2010 over 1994-98 average in Greater London**

Borough	Severity of casualty			Total	Severity ratio	1994-98 KSI average	2010 KSI total	% change 1994-98 average to 2010
	Fatal	Serious	Slight					
City of London	0	18	109	127	14%	7.4	18	143%
Westminster	2	36	270	308	12%	38.4	38	-1%
Camden	1	22	211	234	10%	31.0	23	-26%
Islington	1	23	208	232	10%	26.0	24	-8%
Hackney	2	21	174	197	12%	18.8	23	22%
Tower Hamlets	0	21	156	177	12%	14.4	21	46%
Greenwich	0	12	60	72	17%	9.8	12	22%
Lewisham	0	12	111	123	10%	14.2	12	-15%
Southwark	2	33	230	265	13%	24.6	35	42%
Lambeth	0	37	236	273	14%	36.4	37	2%
Wandsworth	0	30	208	238	13%	32.8	30	-9%
Hammersmith & Fulham	0	14	153	167	8%	20.2	14	-31%
Kensington & Chelsea	0	18	169	187	10%	18.0	18	0%
<b>Total inner London</b>	<b>8</b>	<b>297</b>	<b>2,295</b>	<b>2,600</b>	<b>12%</b>	<b>292.0</b>	<b>305</b>	<b>4%</b>
<b>% of Greater London</b>	<b>80%</b>	<b>65%</b>	<b>65%</b>	<b>65%</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
Waltham Forest	0	11	65	76	14%	12.0	11	-8%
Redbridge	0	4	38	42	10%	12.4	4	-68%
Havering	0	3	31	34	9%	11.4	3	-74%
Barking & Dagenham	0	4	40	44	9%	7.6	4	-47%
Newham	0	12	78	90	13%	10.8	12	11%
Bexley	0	6	47	53	11%	9.0	6	-33%
Bromley	0	10	78	88	11%	18.0	10	-44%
Croydon	0	5	66	71	7%	13.0	5	-62%
Sutton	0	8	32	40	20%	10.0	8	-20%
Merton	0	7	57	64	11%	11.6	7	-40%
Kingston	0	7	54	61	11%	14.0	7	-50%
Richmond	0	19	91	110	17%	21.4	19	-11%
Hounslow	0	11	99	110	10%	19.2	11	-43%
Hillingdon	0	8	72	80	10%	19.6	8	-59%
Ealing	0	13	87	100	13%	20.6	13	-37%
Brent	0	3	78	81	4%	17.6	3	-83%
Harrow	1	2	27	30	10%	7.4	3	-59%
Barnet	1	11	70	82	15%	14.4	12	-17%
Haringey	0	11	85	96	11%	11.8	11	-7%
Enfield	0	5	50	55	9%	13.0	5	-62%
<b>Total outer London</b>	<b>2</b>	<b>160</b>	<b>1,245</b>	<b>1,407</b>	<b>12%</b>	<b>274.8</b>	<b>162</b>	<b>-41%</b>
<b>% of Greater London</b>	<b>20%</b>	<b>35%</b>	<b>35%</b>	<b>35%</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Total Greater London</b>	<b>10</b>	<b>457</b>	<b>3,540</b>	<b>4,007</b>	<b>12%</b>	<b>566.8</b>	<b>467</b>	<b>-18%</b>

Table 6 shows P/C casualties by borough, gender and age group in Greater London in 2010. 63% of male and 73% of female P/C casualties were injured on roads in inner London.

With regard to age, 62% of 16-24 year olds, 69% of 25-59 year olds and 50% of those aged 60 years and over were injured on roads in inner London boroughs, however just over two thirds (67%) of child P/C casualties (under 16 years) were injured in outer London boroughs.

**Table 6: Pedal cyclist casualties by borough, gender and age group in Greater London 2010**

Borough	Gender		Casualty age (banded)					Total
	Male	Female	Under 16	16-24	25-59	60 + over	Unknown	
City of London	102	25	0	12	110	1	4	127
Westminster	231	77	6	32	249	5	16	308
Camden	173	61	4	32	178	8	12	234
Islington	158	74	2	31	185	3	11	232
Hackney	131	66	9	30	138	4	16	197
Tower Hamlets	136	41	4	24	131	1	17	177
Greenwich	60	12	6	14	45	2	5	72
Lewisham	103	20	9	25	81	2	6	123
Southwark	208	57	14	27	211	4	9	265
Lambeth	209	64	2	46	211	4	10	273
Wandsworth	186	52	5	31	181	6	15	238
Hammersmith & Fulham	124	43	3	23	125	8	8	167
Kensington & Chelsea	132	55	7	28	141	2	9	187
<b>Total inner London</b>	<b>1,953</b>	<b>647</b>	<b>71</b>	<b>355</b>	<b>1,986</b>	<b>50</b>	<b>138</b>	<b>2,600</b>
<b>% of Greater London</b>	<b>63%</b>	<b>73%</b>	<b>33%</b>	<b>62%</b>	<b>69%</b>	<b>50%</b>	<b>60%</b>	<b>65%</b>
Waltham Forest	65	11	4	12	55	1	4	76
Redbridge	36	6	3	6	31	0	2	42
Havering	31	3	7	8	15	1	3	34
Barking & Dagenham	41	3	16	11	15	0	2	44
Newham	81	9	8	16	63	0	3	90
Bexley	52	1	14	10	26	2	1	53
Bromley	79	9	7	17	53	4	7	88
Croydon	61	10	9	14	41	3	4	71
Sutton	26	14	3	7	25	3	2	40
Merton	45	19	3	7	44	5	5	64
Kingston	47	14	7	10	40	2	2	61
Richmond	83	27	7	12	81	6	4	110
Hounslow	86	24	12	10	78	3	7	110
Hillingdon	59	21	10	10	47	4	9	80
Ealing	80	20	5	15	66	7	7	100
Brent	68	13	3	8	63	2	5	81
Harrow	25	5	4	4	18	1	3	30
Barnet	72	10	9	11	49	4	9	82
Haringey	81	15	9	12	64	0	11	96
Enfield	49	6	7	15	30	2	1	55
<b>Total outer London</b>	<b>1,167</b>	<b>240</b>	<b>147</b>	<b>215</b>	<b>904</b>	<b>50</b>	<b>91</b>	<b>1,407</b>
<b>% Greater London</b>	<b>37%</b>	<b>27%</b>	<b>67%</b>	<b>38%</b>	<b>31%</b>	<b>50%</b>	<b>40%</b>	<b>35%</b>
<b>Total Greater London</b>	<b>3,120</b>	<b>887</b>	<b>218</b>	<b>570</b>	<b>2,890</b>	<b>100</b>	<b>229</b>	<b>4,007</b>

Table 7 shows P/C casualties by highway authority and severity. More than two thirds (69%) of injuries occurred on borough roads, these accounted for 70% of fatalities, 68% of serious injuries and 69% of slight. Overall, 31% of cyclists were injured on the TLRN (32% of KSIs). The severity ratio was the same for the TLRN and borough roads (12%).

**Table 7: Pedal cyclist casualties by highway authority and severity in Greater London 2010**

Highway authority	Severity of casualty			Total	% of total	Severity ratio
	Fatal	Serious	Slight			
TLRN	3	147	1,105	1,255	31%	12%
Borough Road	7	310	2,435	2,752	69%	12%
<b>Total</b>	<b>10</b>	<b>457</b>	<b>3,540</b>	<b>4,007</b>	<b>100%</b>	<b>12%</b>

Table 8 shows P/C casualties by road class and severity. 67% were injured on 'A' class roads, 13% on unclassified, 11% on 'C' class and 9% on 'B' class roads. The highest severity ratio (13%) was recorded for casualties injured on 'C' class roads. The vast majority (98%) of P/C casualties were recorded as being injured on roads subject to a 30mph speed limit.

**Table 8: Pedal cyclist casualties by road class, severity and severity ratio in Greater London 2010**

Road class	Severity of casualty			Total	% of total	Severity ratio
	Fatal	Serious	Slight			
A	7	310	2,365	2,682	67%	12%
B	0	34	316	350	9%	10%
C	0	58	394	452	11%	13%
Unclassified	3	55	465	523	13%	11%
<b>Total</b>	<b>10</b>	<b>457</b>	<b>3,540</b>	<b>4,007</b>	<b>100%</b>	<b>12%</b>

Table 9 shows P/C casualties by junction detail and junction control. 84% of P/C casualties were injured at or within 20m of a junction, compared to 75% for all casualties in Greater London, highlighting the particular vulnerability of pedal cyclists at junctions. Of those injured at a junction, 64% occurred at a 'T' or staggered junction and a further 21% at a crossroads. 10% were injured at a roundabout or mini-roundabout. In terms of junction control, three quarters (76%) of P/C casualties were injured at a junction where the control was 'Give Way' and 24% were at a junction controlled by automatic traffic signals.

**Table 9: Pedal cyclist casualties by junction control and junction detail in Greater London 2010**

Junction detail	Not applicable	Junction control			Total
		Authorised Person	Automatic Traffic Signals	Give Way or Uncontrolled	
Roundabout	n/a	0	25	219	244
Mini-Roundabout	n/a	0	1	79	81
T or Staggered Junction	n/a	0	316	1,815	2,135
Slip Road	n/a	0	1	9	10
Crossroads	n/a	1	413	277	692
Multi Junction	n/a	0	35	14	49
Private Drive	n/a	1	2	134	137
Other Junction	n/a	0	1	3	4
<b>Total at junctions</b>	<b>n/a</b>	<b>2</b>	<b>794</b>	<b>2,550</b>	<b>3,352</b>
No junction within 20m	655	n/a	n/a	n/a	655
<b>Total</b>	<b>655</b>	<b>2</b>	<b>794</b>	<b>6</b>	<b>4,007</b>

## **Road surface and weather**

The majority of P/C casualties (84%) were injured in collisions on a dry road surface, with 15% on a wet surface and less than 1% on frost, ice or snow. The severity ratio on a dry road was slightly lower at 11% than on a wet road at 12%.

90% of P/C casualties were injured in fine weather conditions, while 8% were injured in the rain.

The low numbers of P/C casualties injured in the wet may reflect the fact that some cyclists are less inclined to ride in adverse weather conditions and the lower frequency of wet days compared to dry.

## **When?**

Figures 7, 8 and 9 show the number of P/C casualties by time of day, day of week and month in Greater London in 2010. They also indicate the proportions occurring in daylight or during the hours of darkness.

### **Time of day**

Over three quarters (78%) of P/C casualties were injured in the 12 hour period between 7am and 7pm. There were two clear peaks during this period which coincided with the traditional morning and evening peak traffic periods. Just over a quarter (26%) of all P/C casualties were injured between 7am and 10am, with the highest single hour between 8am and 9am, 468 casualties (12%). A further 34% of cyclists were injured between 4pm and 8pm.

The low period for P/C casualties was between midnight and 6am which accounted for just 3% of the total. 78% of P/C casualties were injured during daylight hours.

### **Day of week**

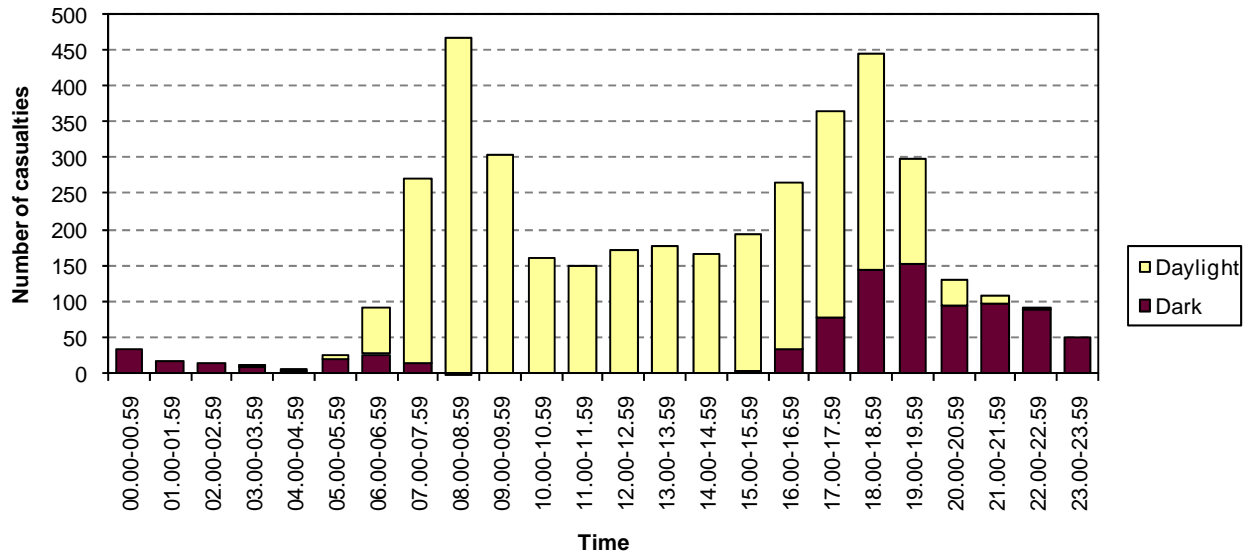
84% of P/C casualties were injured on a weekday, an average of 17% per weekday, with 9% on a Saturday and 7% on a Sunday. The highest proportion of cyclists injured in the dark (26%) occurred on a Saturday.

### **Month**

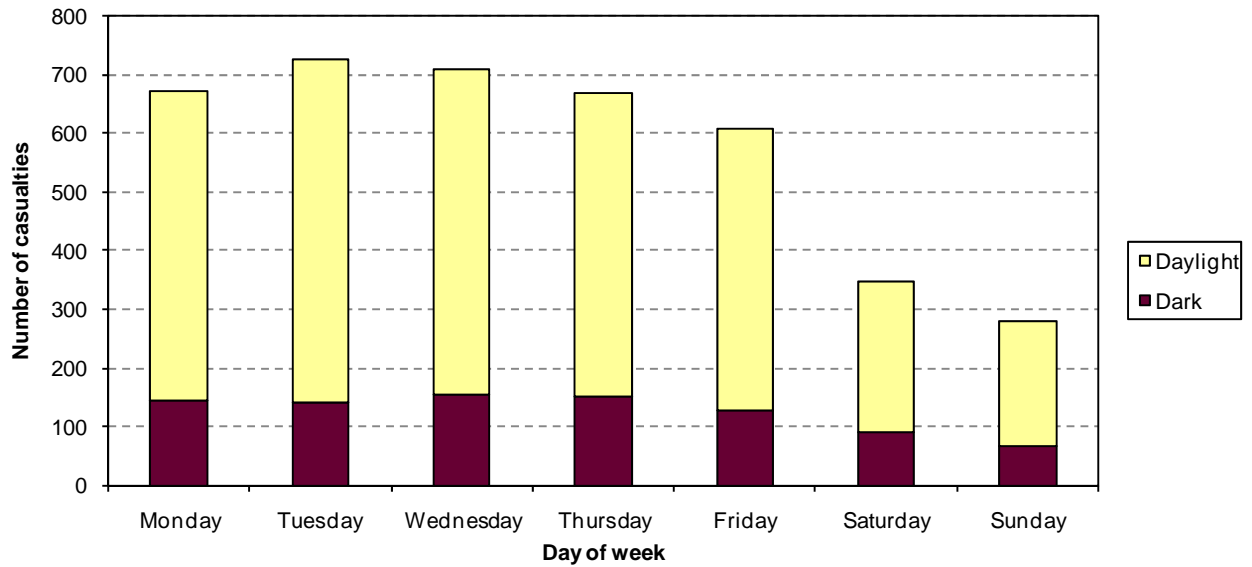
Over two thirds (71%) of P/C casualties were injured in the period April to October, with numbers peaking in July at 494 casualties (12%) and June at 455 casualties (11%). Numbers fell to their lowest in the winter months, particularly December and January at 135 and 170 casualties (3% and 4%) respectively. 42% or more of P/C casualties injured per month in January, February, November and December were injured in the dark.

The peak of P/C casualties in June and July may be related to increases in cycling during the summer months, with the relatively warmer weather and longer hours of daylight.

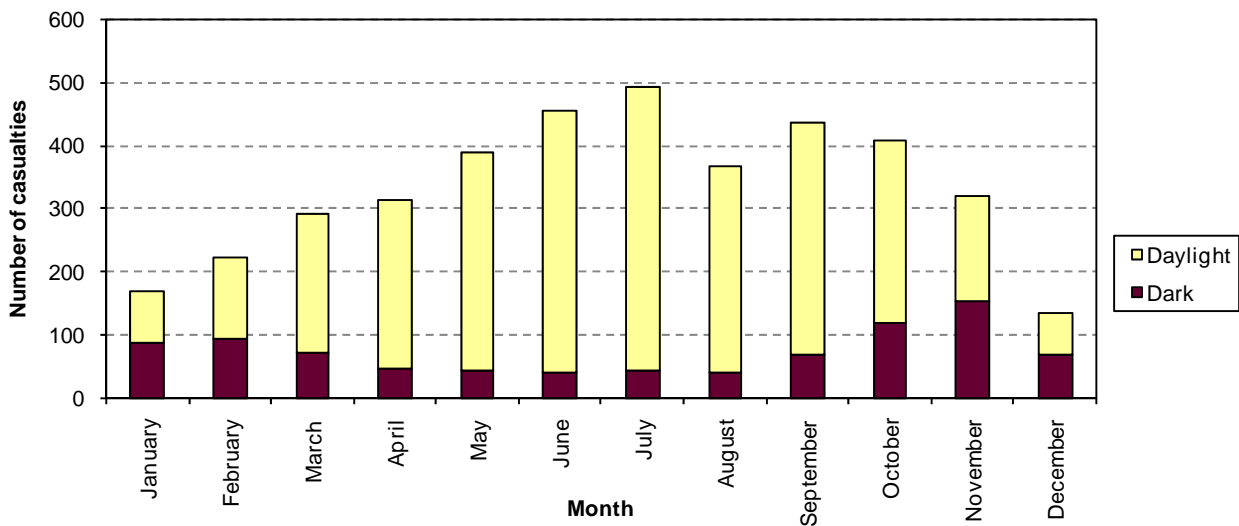
**Fig. 7: Pedal cyclist casualties by time of day and light conditions in Greater London 2010**



**Fig. 8: Pedal cyclist casualties by day and light conditions in Greater London 2010**



**Fig. 9: Pedal cyclist casualties by month and light conditions in Greater London 2010**



## Manoeuvre

Table 10 shows P/C casualties by their manoeuvre and severity. Nearly three quarters (74%) of cyclists were injured while 'going ahead', i.e. just riding along the road. The next most common manoeuvre (11%) involved the pedal cyclist performing an overtaking manoeuvre. 5% of P/C casualties were turning right and 2% turning left.

**Table 10: Pedal cyclist casualties by cyclist manoeuvre, severity and severity ratio in Greater London 2010**

Vehicle manoeuvre	Severity of casualty			Total	% of total	Severity ratio
	Fatal	Serious	Slight			
Reversing	0	0	6	6	0%	0%
Parked	0	0	3	3	0%	0%
Going Ahead But Held Up	1	2	37	40	1%	8%
Slowing or Stopping	0	19	92	111	3%	17%
Moving Off	0	11	50	61	2%	18%
U-turning	0	0	3	3	0%	0%
Turning Left	2	9	86	97	2%	11%
Waiting to Turn Left	0	0	2	2	0%	0%
Turning Right	0	17	186	203	5%	8%
Waiting to Turn Right	0	0	12	12	0%	0%
Changing Lane To Left	0	0	8	8	0%	0%
Changing Lane To Right	1	3	37	41	1%	10%
Overtaking Moving Veh Offside	0	5	51	56	1%	9%
Overtaking Stat Veh Offside	0	25	169	194	5%	13%
Overtaking Nearside	0	25	180	205	5%	12%
Going Ahead Left Bend	0	4	44	48	1%	8%
Going Ahead Right Bend	0	2	82	84	2%	2%
Going Ahead Other	6	335	2,492	2,833	71%	12%
<b>Total</b>	<b>10</b>	<b>457</b>	<b>3,540</b>	<b>4,007</b>	<b>100%</b>	<b>12%</b>

## Common conflicts in pedal cycle KSI collisions



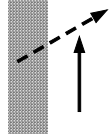




Tables 11 and 12 show listings of the main types of conflicts that occurred in collisions which resulted in fatal or serious injury to a pedal cyclist in 2010. The tables include a simple sketch representation of the conflict between the pedal cyclist (shown as a broken line) and the other vehicle involved (shown as a solid line). The information included in the tables was compiled from a manual analysis of the details of each P/C KSI collision.

### Table 11 – Fatal summary

Three types of conflict each resulted in two (20%) of the fatal P/C collisions and were, the cyclist and other vehicle turning left together, the other vehicle changing lane to the left across the path of the P/C and the P/C riding off the footway and into the path of the other vehicle.

In two fatal collisions (20%) the pedal cyclist was in collision with a heavy goods vehicle (HGV) over 7.5 tonnes. In addition two cyclists (20%) were fatally injured in collisions with a concrete mixing lorry and a skip lorry. Under *STATS 19* these vehicles are coded as 'other motor vehicles' rather than goods vehicles, so are not included in the HGV total. Four cyclists were killed in collisions with cars, one with a bus or coach and one with a taxi.

**Table 11: Ranked analysis of the conflicts between vehicles in collisions resulting in a pedal cyclist being fatally injured in London, 2010**

Conflict	Description	Conflict between pedal cycle and:											Total	%
		Pedal cycle	Powered 2 wheeler	Car	Taxi	Goods under 3.5t	Goods 3.5 to 7.5t	Goods over 7.5t	Bus or coach	Other vehicle	No other vehicle	Multiple vehicle *		
	P/C and other vehicle collide when both turning left	0	0	0	0	0	0	1	0	#1	0	0	2	20%
	Other vehicle changes lane to left across the path of P/C	0	0	1	0	0	0	0	0	#2	0	0	2	20%
	P/C rides off footway into path of other vehicle	0	0	0	1	0	0	1	0	0	0	0	2	20%
	P/C changes lane to right across path of other vehicle.	0	0	1	0	0	0	0	0	0	0	0	1	10%
	P/C hits open door / swerves to avoid open door of other vehicle.	0	0	1	0	0	0	0	0	0	0	0	1	10%
	Other vehicle runs into rear of P/C	0	0	0	0	0	0	0	1	0	0	0	1	10%
	Head on collision between P/C and other vehicle	0	0	1	0	0	0	0	0	0	0	0	1	10%
	<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>100%</b>

#1 Skip

#2 Concrete mixing lorry



### Table 12 – Serious summary





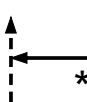

The most common conflict in collisions which resulted in serious injury to a cyclist involved the other vehicle turning right across the path of the oncoming cyclist. This accounted for 52 out of 456 (11%) of the serious collisions.



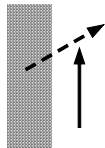
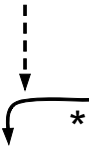


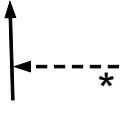



The second most common conflicts both had 48 collisions (11%) and involved the cyclist and other vehicle travelling alongside each other and the door of the other vehicle being opened into the path of the P/C and the cyclist either hitting it or being injured when swerving to avoid it. A further 41 collisions (9%) involved the other vehicle turning left across the path of the pedal cyclist.


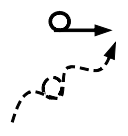

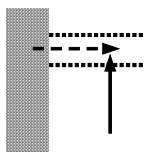






A total of 67 collisions (15%) involved the other vehicle disobeying the junction control and either going straight across the path of the cyclist (6%), turning right into the path of the cyclist (5%), or turning left into the cyclist's path (4%).


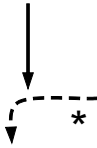

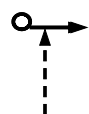
In just over two thirds (67%) of serious P/C collisions the main conflict was between the cyclist and a car. Goods vehicles were involved in 13% of collisions resulting in serious injury to a P/C.

**Table 12: Ranked analysis of the most commonly occurring conflicts between vehicles in collisions resulting in a pedal cyclist being seriously injured in London, 2010**

Conflict	Description	Conflict between pedal cycle and:											Total	%
		Pedal cycle	Powered 2 wheeler	Car	Taxi	Goods under 3.5t	Goods 3.5 to 7.5t	Goods over 7.5t	Bus or coach	Other vehicle	No other vehicle	Multiple vehicle *		
	Other vehicle turns right across path of P/C	0	2	46	0	3	0	0	1	0	0	(0)	<b>52</b>	11%
	P/C and other vehicle travelling alongside each other.	1	1	25	1	6	2	1	9	2	0	(0)	<b>48</b>	11%
	P/C hits open door / swerves to avoid open door of other vehicle.	0	0	34	8	6	0	0	0	0	0	(2)	<b>48</b>	11%
	Other vehicle turns left across the path of P/C	0	0	26	0	7	0	6	1	1	0	(0)	<b>41</b>	9%
	Other vehicle fails to give way or disobeys junction control & collides with P/C	0	1	21	2	1	1	0	0	0	0	(1)	<b>26</b>	6%
	Other vehicle disobeys junction control & turns right into path of P/C	0	0	20	0	2	1	2	0	0	0	(0)	<b>25</b>	5%

Conflict	Description	Conflict between pedal cycle and:											Total	%
		Pedal cycle	Powered 2 wheeler	Car	Taxi	Goods under 3.5t	Goods 3.5 to 7.5t	Goods over 7.5t	Bus or coach	Other vehicle	No other vehicle	Multiple vehicle *		
	Other vehicle runs into rear of P/C	1	1	20	0	1	1	0	1	0	0	(2)	25	5%
	No other vehicle hit by P/C (although may be involved). Various manoeuvres or loss of control.	0	0	1	0	0	0	0	0	0	21	(0)	22	5%
	P/C rides off footway into path of other vehicle.	0	0	18	0	0	1	0	0	1	0	(1)	20	4%
	Other vehicle disobeys junction control & turns left into path of P/C	0	0	13	1	1	1	0	0	0	0	(0)	16	4%
	P/C runs into rear of other vehicle.	1	1	3	1	5	0	0	5	0	0	(1)	16	4%
	Head on collision between P/C and other vehicle	0	1	13	1	0	0	0	0	0	0	(0)	15	3%
	P/C fails to give way or disobeys junction control & collides with other vehicle	0	0	11	2	1	0	0	0	0	0	(1)	14	3%
	P/C hits parked vehicle	0	0	12	0	1	0	0	0	0	0	(0)	13	3%
	P/C performs overtaking manoeuvre into path of right turning vehicle	0	1	7	0	1	1	0	0	0	0	(0)	10	2%
	Other vehicle changes lane to left across the path of P/C	0	0	4	0	1	0	1	0	0	0	(0)	6	1%

Conflict	Description	Conflict between pedal cycle and:											Total	%
		Pedal cycle	Powered 2 wheeler	Car	Taxi	Goods under 3.5t	Goods 3.5 to 7.5t	Goods over 7.5t	Bus or coach	Other vehicle	No other vehicle	Multiple vehicle *		
	Other vehicle U-turns into path of P/C	0	0	5	1	0	0	0	0	0	0	(0)	6	1%
	P/C brakes and/or swerves to avoid (uninjured) pedestrian	0	0	0	0	0	0	0	0	0	6	(0)	6	1%
	P/C turns right across path of other vehicle	1	2	2	0	0	0	0	0	0	0	(0)	5	1%
	P/C rides across road at pedestrian crossing into path of other vehicle.	0	0	4	0	0	0	0	1	0	0	(0)	5	1%
	P/C loses control & hits other vehicle - various manoeuvres	0	1	3	0	0	0	0	0	1	0	(0)	5	1%
	P/C changes lane to right across path of other vehicle.	0	0	4	0	0	0	0	1	0	0	(0)	5	1%
	P/C and other vehicle collide when both turning left	0	0	1	0	1	0	1	0	1	0	(0)	4	1%
	Other vehicle reverses into P/C	0	0	3	0	1	0	0	0	0	0	(0)	4	1%
	Not known how collision occurred	0	0	2	0	0	0	0	0	0	2	(0)	4	1%
	Other vehicle starts off or pulls out into path of P/C	0	0	3	0	1	0	0	0	0	0	(0)	4	1%

Conflict	Description	Conflict between pedal cycle and:											Total	%	
		Pedal cycle	Powered 2 wheeler	Car	Taxi	Goods under 3.5t	Goods 3.5 to 7.5t	Goods over 7.5t	Bus or coach	Other vehicle	No other vehicle	Multiple vehicle *			
Various	Various manouvres,	0	0	2	0	0	0	0	0	0	0	1	(1)	3	1%
	P/C and other vehicle collide when both turning right	0	0	1	0	2	0	0	0	0	0	0	(0)	3	1%
	P/C disobeys junction control & turns left into path of other vehicle	0	0	1	0	1	0	0	0	0	0	0	(0)	2	0%
	Other vehicle changes lane to right across the path of P/C	0	1	1	0	0	0	0	0	0	0	0	(0)	2	0%
	P/C strikes ped crossing road not at or within 50m of a formal ped crossing	0	0	0	0	0	0	0	0	0	0	1	(0)	1	0%
	<b>TOTAL</b>	<b>4</b>	<b>12</b>	<b>306</b>	<b>17</b>	<b>42</b>	<b>8</b>	<b>11</b>	<b>19</b>	<b>6</b>	<b>31</b>	<b>0</b>	<b>456</b>	<b>100%</b>	

\* collisions involving three or more vehicles - the main vehicle in such collisions is recorded in the relevant column

## All vehicles involved in collisions in which a pedal cyclist was injured

Table 13 shows all the vehicles involved in collisions resulting in injury to one or more pedal cyclist in Greater London in 2010. It must be emphasised that the cyclist may not have been in direct contact with each of the vehicle types listed.

Cars were by far the most common vehicle involved in collisions where a cyclist was injured, representing 74% of the other vehicles involved. This was the case for all severities and for male and female casualties.

After cars, goods vehicles, buses/coaches and taxis were the most common vehicles involved in P/C collisions.

**Table 13: All vehicles involved in collisions where one or more pedal cyclist was injured - Greater London 2010**

Vehicles involved in P/C collisions	Number of each type of vehicle involved in collisions resulting in male pedal cyclist casualties			Number of each type of vehicle involved in collisions resulting in female pedal cyclist casualties		
	Fatal	Serious	Slight	Fatal	Serious	Slight
Pedal Cycle	6	362	2,760	4	101	788
M/C <= 50cc	0	3	7	0	1	1
M/C 50-125cc	0	4	31	0	3	10
M/C 125-500cc	0	0	5	0	0	4
M/C > 500cc	0	2	25	0	1	7
Taxi	0	12	149	1	5	50
Car	3	258	1,979	1	56	562
Minibus (8-16 Passengers)	0	0	7	0	1	2
Bus/Coach	0	18	100	1	3	0
Other Motor Vehicle	1	3	15	1	2	33
Light Goods (=< 3.5t MGW)	0	29	278	0	15	75
Medium Goods (3.5-7.5t MGW)	0	5	33	0	3	16
Heavy Goods( => 7.5t MGW)	2	5	15	0	6	4
<b>Sum of all vehicles involved in collisions resulting in one or more P/C casualty</b>	<b>12</b>	<b>701</b>	<b>5,404</b>	<b>8</b>	<b>197</b>	<b>1,552</b>

### Contributory factors

Table 14 shows the top 20 contributory factors assigned to P/Cs and other vehicles involved in collisions resulting in one or more P/C casualty.

Contributory factors are assigned to the participants of a collision by the police and can be highly subjective. They reflect the reporting officer's opinion at the time of reporting and may not be the result of extensive investigation. Up to six factors can be assigned to a single collision; more than one factor may be assigned to the same road user and the same factor may relate to more than one road user.

The table indicates the frequency that contributory factors were assigned to the participants of these collisions, which gives an indication of the actions that might have been taken by the cyclist and other road users involved at the time of the collision.

The two most frequently coded factors for both the P/C and other vehicle were 'failed to look properly' and 'failed to judge other person's path or speed'.

**Table 14: Contributory factors assigned to all vehicles involved in collisions where one or more pedal cyclist was injured in Greater London in 2010**

**Top 20 factors assigned to the cyclist**

<b>Contributory factor</b>	<b>No. of times factor assigned to cyclist</b>
405 FAILED TO LOOK PROPERLY	947
406 FAILED TO JUDGE OTHER PERSON'S PATH OR SPEED	543
602 CARELESS/RECKLESS/IN A HURRY	370
410 LOSS OF CONTROL	297
403 POOR TURN OR MANOEUVRE	195
701 VISION AFFECTED - STATIONARY OR PARKED VEHICLE(S)	181
310 CYCLIST ENTERING ROAD FROM PAVEMENT	166
409 SWERVED	103
308 FOLLOWING TOO CLOSE	90
408 SUDDEN BRAKING	73
307 TRAVELLING TOO FAST FOR CONDITIONS	63
301 DISOBEYED AUTOMATIC TRAFFIC SIGNAL	61
302 DISOBEYED GIVE WAY OR STOP SIGN OR MARKINGS	57
501 IMPAIRED BY ALCOHOL	41
507 CYCLIST WEARING DARK CLOTHING AT NIGHT	39
506 NOT DISPLAYING LIGHTS AT NIGHT OR IN POOR VISIBILITY	38
510 DISTRACTION OUTSIDE VEHICLE	28
103 SLIPPERY ROAD (DUE TO WEATHER)	27
305 ILLEGAL TURN OR DIRECTION OF TRAVEL	25
306 EXCEEDING SPEED LIMIT	24

<b>Contributory factor</b>	<b>No. of times factor assigned to other vehicle</b>
405 FAILED TO LOOK PROPERLY	2650
406 FAILED TO JUDGE OTHER PERSON'S PATH OR SPEED	1081
602 CARELESS/RECKLESS/IN A HURRY	1065
403 POOR TURN OR MANOEUVRE	721
407 PASSING TOO CLOSE TO CYCLIST, HORSE RIDER OR PEDESTRIAN	683
302 DISOBEYED GIVE WAY OR STOP SIGN OR MARKINGS	341
904 VEHICLE DOOR OPENED OR CLOSED NEGLIGENTLY	322
701 VISION AFFECTED - STATIONARY OR PARKED VEHICLE(S)	214
308 FOLLOWING TOO CLOSE	155
404 FAILED TO SIGNAL/ MISLEADING SIGNAL	128
710 VISION AFFECTED - VEHICLE BLIND SPOT	113
601 AGGRESSIVE DRIVING	105
408 SUDDEN BRAKING	50
409 SWERVED	44
301 DISOBEYED AUTOMATIC TRAFFIC SIGNAL	36
401 JUNCTION OVERSHOOT	34
402 JUNCTION RESTART	32
306 EXCEEDING SPEED LIMIT	30
307 TRAVELLING TOO FAST FOR CONDITIONS	29
706 VISION AFFECTED - DAZZLING SUN	23

## What is the cost?

Based on the average cost of P/C casualties as detailed in Department for Transport draft Transport Analysis Guidance document (TAG Unit 3.4.1), the cost to the community of P/C casualties is estimated at around £194 million at June 2009 prices. Pedal cycle casualties averaged 11 per day in Greater London in 2010, with a subsequent cost to the community of approximately £533,000 per day.

## Background documents

1. Reported Road Casualties Great Britain: Main results 2010 (Department for Transport)  
<http://www.dft.gov.uk/pgr/statistics/datatablespublications/accidents/reported-road-casualties-gb-main-results-2010.html>
2. Transport Analysis Guidance (TAG) Unit 3.4.1 – The Accidents Sub-Objective IN DRAFT (Department for Transport – January 2011)  
<http://www.dft.gov.uk/webtag/documents/expert/pdf/unit3.4.1d.pdf>
3. Radial Traffic Movements in London 1971-2010 TfL (unpublished)
4. P/C flow data from TfL annual cycle counts

Copies of road safety reports and research published by TfL can be found at –  
[http://londonroadsafety.tfl.gov.uk/data-research\\_publications.php](http://londonroadsafety.tfl.gov.uk/data-research_publications.php)

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