

**Fact sheet****London Road Safety Unit****LAAU topic 2007-1**

February 2007

Powered two wheeler user casualties in Greater London

This fact sheet looks into the scale and nature of road traffic collisions resulting in injury to powered two wheeler (P2W) users (riders and passengers) in the Greater London area. It gives an overview of such collisions for the period 1986 to 2005, and then looks in detail at the profile of the casualties and factors relating to the collisions that occurred in 2005 (the latest year for which finalised data is available).

It provides background information to support the Government and Mayor of London's targets to reduce road casualties by the year 2010. The target in London for P2W casualties is a 40% reduction in those killed or seriously injured (KSI) by 2010 from a baseline of the average number of casualties for 1994-98.

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.

Prior to 1999 *Stats 19* categorised P2W vehicles as mopeds, motor scooters and motor cycles. From January 1999 the P2W categories were changed to mopeds, motorcycles up to and including 125cc and motorcycles over 125cc. A further change took place from January 2005, whereby the P2W categories became motorcycle 50cc and under, motorcycle over 50cc and up to 125cc, motorcycle over 125cc and up to 500cc and motorcycle over 500cc.

Key facts

- 19% of all collisions in Greater London in 2005 resulted in injury to P2W users, who in turn represented 16% of all casualties.
- P2W user KSI casualties accounted for 23% of all KSI casualties in 2005.
- P2W user casualties have fallen by 15% between the 1994-98 average and 2005.
- In 2005, 90% of P2W casualties were male.
- Just over three quarters (77%) of P2W user casualties of known age injured in 2005 were aged between 15 and 39 years.

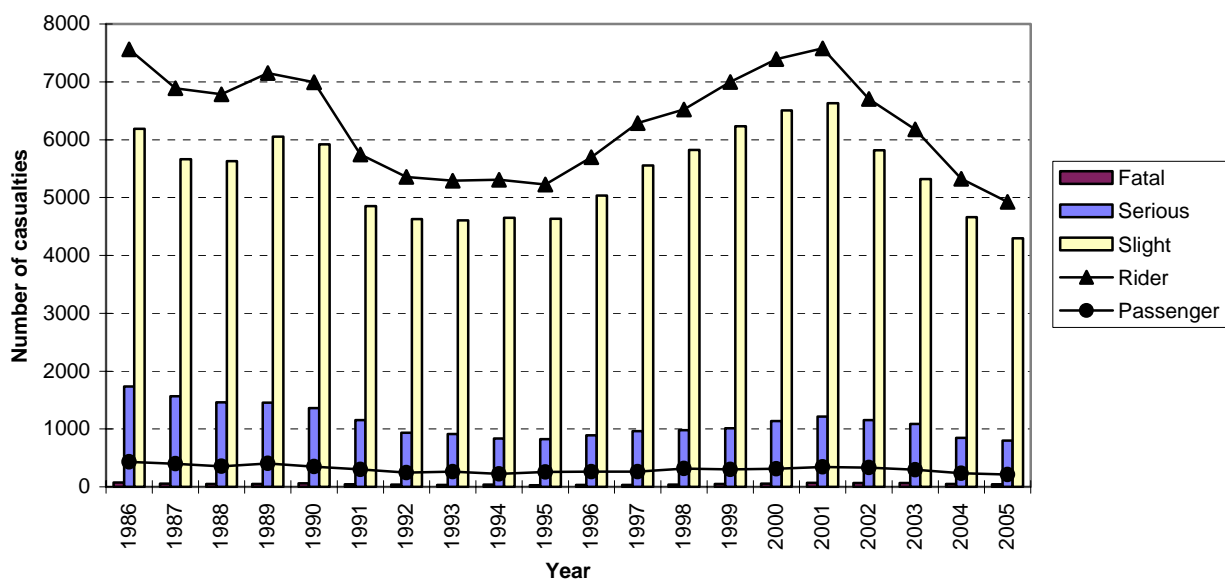
Annual trends 1986 to 2005

Table 1 and Figure 1 show the number of P2W user casualties by year, casualty class and severity in Greater London from 1986 to 2005.

Table 1: P2W user casualties by year, casualty class and severity in Greater London 1986 to 2005

Year	P2W collisions	Casualty class		Severity of casualty			Total	Severity ratio
		Rider	Passenger	Fatal	Serious	Slight		
1986	7,674	7,564	435	74	1,737	6,188	7,999	23%
1987	6,975	6,888	398	57	1,564	5,665	7,286	22%
1988	6,886	6,785	356	51	1,459	5,631	7,141	21%
1989	7,260	7,153	404	49	1,458	6,050	7,557	20%
1990	7,082	6,992	352	59	1,364	5,921	7,344	19%
1991	5,833	5,745	303	45	1,152	4,851	6,048	20%
1992	5,457	5,357	247	36	936	4,632	5,604	17%
1993	5,381	5,290	265	34	913	4,608	5,555	17%
1994	5,375	5,307	224	40	839	4,652	5,531	16%
1995	5,314	5,226	256	25	824	4,633	5,482	15%
1996	5,786	5,695	264	35	891	5,033	5,959	16%
1997	6,379	6,285	263	32	961	5,555	6,548	15%
1998	6,627	6,525	316	36	981	5,824	6,841	15%
1994 to 1998 average	5,896.2	5,807.6	264.6	33.6	899.2	5,139.4	6,072.2	15%
1999	7,085	6,999	299	51	1,012	6,235	7,298	15%
2000	7,461	7,392	310	55	1,140	6,507	7,702	16%
2001	7,665	7,577	343	71	1,215	6,634	7,920	16%
2002	6,805	6,705	336	66	1,156	5,819	7,041	17%
2003	6,237	6,176	293	63	1,089	5,317	6,469	18%
2004	5,389	5,325	233	47	848	4,663	5,558	16%
2005	4,978	4,926	216	44	801	4,297	5,142	16%
% change 1986 to 2005	-35%	-35%	-50%	-41%	-54%	-31%	-36%	-
% change 1994-98 average to 2005	-16%	-15%	-18%	31%	-11%	-16%	-15%	-
% change 2004 to 2005	-8%	-7%	-7%	-6%	-6%	-8%	-7%	-

Fig. 1: P2W user casualties by year, severity and casualty class in Greater London 1986 to 2005



P2W user casualties showed a general downward trend for 10 years from a high of 7,999 in 1986 to a low of 5,482 in 1995. This trend reversed from 1996 when casualty numbers rose year on year to a second high of 7,920 in 2001. Since this time casualty numbers have again been falling steadily to an all time low of 5,142 in 2005. This represents a reduction of 36% from 1986 to 2005.

Fatal and serious injuries fell by 41% and 54% respectively between 1986 and 2005, while slight casualties fell by 31%. Overall, collisions involving injury to P2W users fell by 35% during this period. Comparing 2005 with the 1994-98 average, all P2W user casualties fell by 15%, serious injuries by 11% and slight by 16%. P2W fatalities however rose by 31%. KSI casualties fell by 9% overall. Comparing 2005 with 2004, there were decreases in all severities with fatal, serious and slight injuries falling by 6%, 6% and 8% respectively. Overall P2W casualties fell by 7%.

The severity ratio (the percentage of fatal and serious injuries to all injuries) reduced quite steadily between 1986 and 1999 from 23% to 15%. It rose again between 2000 and 2003 to 18% and has been at 16% since then.

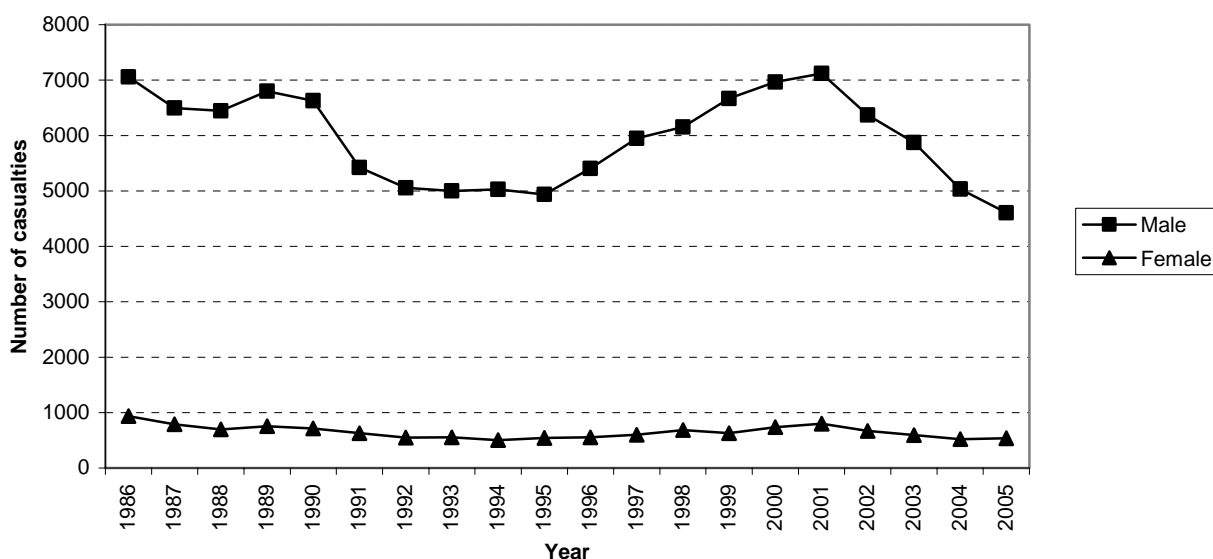
In terms of casualty class, P2W passenger casualties have shown the biggest reduction during this period, decreasing by 50% between 1986 and 2005, while P2W riders fell by 35%. This difference has levelled out in more recent years, with passenger casualties falling by 18% and riders by 15% between the 1994-98 average and 2005. Both casualty classes fell by 7% between 2004 and 2005. The proportion of P2W rider to passenger casualties has remained virtually constant throughout this 20 year period, averaging 95% riders to 5% passengers.

Changes in casualty numbers are viewed in relation to changes in P2W ownership and usage on page 6.

Gender

Figure 2 shows P2W user casualties by gender in Greater London 1986 to 2005.

Fig. 2: P2W user casualties by gender in Greater London 1986 to 2005



By far the greatest proportion of P2W user casualties was male, with an average of 90% per year over this period. The male – female split has remained fairly constant during this time. The number of male P2W user casualties decreased by 16% from the 1994-98 average to 2005, while females decreased by 7%.

On average over the 1986 to 2005 period, 95% of P2W user casualties were riders, of which 92% were male. Of the 5% P2W passenger casualties however, 57% were female.

Age

Figure 3 and Table 2 show P2W user casualties by year and age (banded) in Greater London from 1986 to 2005.

On average over this period casualties under the age of 16 have made up 1% of the P2W casualty total. The number of casualties in this age group has been increasing however, rising by 22% between 1986 and 2005 and by 49% between the 1994-98 average and 2005. Casualties in this group reached a peak of 94 in 2002 and have begun falling in recent years, with a reduction of 22% between 2004 and 2005.

P2W user casualties aged 60 years and over also made up an average of 1% of the total. Numbers in this age band have been falling throughout this period, showing reductions of 51% between 1986 and 2005, 21% between the 1994-98 average and 2005 and 13% between 2004 and 2005.

The majority of P2W casualties fall within the 16-24 and 25-59 year age groups, averaging 32% and 61% of the total respectively. However, there have been quite pronounced changes within these groups throughout this period. In 1986 those aged between 16 and 24 years accounted for 51% of all P2W casualties compared to 26% in 2005. Casualty numbers in this group fell by 68% in this period and by 4% between the 1994-98 average and 2005. Casualties in the 25-59 years age group made up 41% of all P2W casualties in 1986 compared to 67% in 2005. Casualty numbers in this group increased by 6% between 1986 and 2005, but fell by 20% between the 1994-98 average and 2005.

Fig. 3 : P2W user casualties by year and age (banded) in Greater London 1986 to 2005

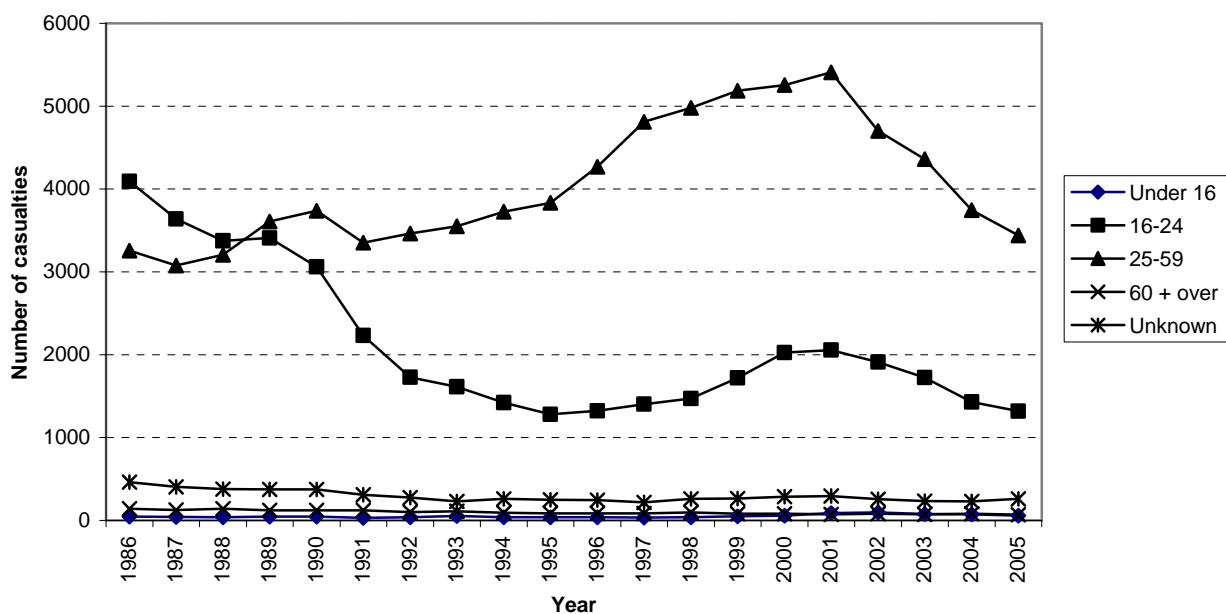


Table 2: P2W user casualties by year and age (banded) in Greater London 1986 to 2005

Year	Casualty age banded					Total	% aged	% aged	% aged	% aged
	Under 16	16-24	25-59	60 + over	Unknown		<16	16-24	25-59	60+
1986	46	4,092	3,257	141	463	7,999	0.6%	51.2%	40.7%	1.8%
1987	43	3,639	3,075	125	404	7,286	0.6%	49.9%	42.2%	1.7%
1988	37	3,376	3,205	143	380	7,141	0.5%	47.3%	44.9%	2.0%
1989	45	3,410	3,608	121	373	7,557	0.6%	45.1%	47.7%	1.6%
1990	46	3,063	3,738	123	374	7,344	0.6%	41.7%	50.9%	1.7%
1991	31	2,232	3,352	124	309	6,048	0.5%	36.9%	55.4%	2.1%
1992	40	1,729	3,461	98	276	5,604	0.7%	30.9%	61.8%	1.7%
1993	52	1,613	3,549	111	230	5,555	0.9%	29.0%	63.9%	2.0%
1994	37	1,420	3,726	90	258	5,531	0.7%	25.7%	67.4%	1.6%
1995	37	1,279	3,833	84	249	5,482	0.7%	23.3%	69.9%	1.5%
1996	39	1,323	4,269	83	245	5,959	0.7%	22.2%	71.6%	1.4%
1997	36	1,401	4,810	85	216	6,548	0.5%	21.4%	73.5%	1.3%
1998	39	1,470	4,980	94	258	6,841	0.6%	21.5%	72.8%	1.4%
1994 to 1998 average	37.6	1,379	4,323.6	87.2	245.2	6,072.2	0.6%	22.7%	71.2%	1.4%
1999	50	1,720	5,187	79	262	7,298	0.7%	23.6%	71.1%	1.1%
2000	57	2,025	5,253	81	286	7,702	0.7%	26.3%	68.2%	1.1%
2001	89	2,055	5,406	74	296	7,920	1.1%	25.9%	68.3%	0.9%
2002	94	1,912	4,700	79	256	7,041	1.3%	27.2%	66.8%	1.1%
2003	77	1,725	4,362	73	232	6,469	1.2%	26.7%	67.4%	1.1%
2004	72	1,431	3,745	79	231	5,558	1.3%	25.7%	67.4%	1.4%
2005	56	1,320	3,439	69	258	5,142	1.1%	25.7%	66.9%	1.3%
% change 1986 to 2005	22%	-68%	6%	-51%	-44%	-36%	-	-	-	-
% change 1994-98 average to 2005	49%	-4%	-20%	-21%	5%	-15%	-	-	-	-
% change 2004 to 2005	-22%	-8%	-8%	-13%	12%	-7%	-	-	-	-

Type of P2W

Table 3 shows P2W user casualties by type of P2W vehicle ridden in Greater London 1986 to 2005. The *Stats 19* categories have changed twice during this 20 year period (see details of categories on page 1) and as a result it is not possible to make meaningful comparisons between the 2005 data and the 1994-98 average or 1986 data.

The most data is available for moped casualties as this category was used until the end of 2004. Numbers have fluctuated quite dramatically throughout this period, falling from 860 in 1986 to just 262 in 1996, and then rising steeply to a peak of 1,215 in 2002 before dropping again to 891 in 2004. While the new category of motorcycle up to 50cc is not directly comparable with the former moped category (some motorcycles under 50cc are capable of speeds up to 60-70mph, while mopeds are limited to 31mph), the number of casualties on these smaller engine bikes increased again in 2005 to an all time high of 1,260. Therefore, while all P2W casualties have decreased over recent years, those riding bikes with an engine under 50cc have increased.

Table 3: P2W user casualties by year and type of P2W vehicle in Greater London 1986 to 2005

Year	Type of powered two wheeler								Total P2W
	Moped	Motor scooter	Motor cycle	M/C					
				M/C <=50cc	M/C >=50-125cc	M/C >125cc	M/C >125-500cc	M/C >500cc	
1986	860	219	6,920	-	-	-	-	-	7,999
1987	760	138	6,388	-	-	-	-	-	7,286
1988	591	129	6,421	-	-	-	-	-	7,141
1989	557	122	6,878	-	-	-	-	-	7,557
1990	503	94	6,747	-	-	-	-	-	7,344
1991	456	106	5,486	-	-	-	-	-	6,048
1992	391	65	5,148	-	-	-	-	-	5,604
1993	407	66	5,082	-	-	-	-	-	5,555
1994	302	47	5,182	-	-	-	-	-	5,531
1995	266	47	5,169	-	-	-	-	-	5,482
1996	262	89	5,608	-	-	-	-	-	5,959
1997	336	139	6,073	-	-	-	-	-	6,548
1998	431	222	6,188	-	-	-	-	-	6,841
1994 to 1998 average	319.4	108.8	5,644.0	-	-	-	-	-	6,072.2
1999	867	-	-	-	1,577	4,854	-	-	7,298
2000	684	-	-	-	2,527	4,491	-	-	7,702
2001	1,032	-	-	-	2,547	4,341	-	-	7,920
2002	1,215	-	-	-	2,129	3,697	-	-	7,041
2003	840	-	-	-	2,140	3,489	-	-	6,469
2004	891	-	-	-	1,728	2,939	-	-	5,558
2005	-	-	-	1,260	1,270	-	1,140	1,472	5,142

* NB The Stats 19 P2W definitions changed from Jan 1999 from Motor Scooter and Motor Cycle to M/C <= 125cc and M/C > 125cc, and from Jan 2005 from M/C <=125cc and M/C >125cc to M/C >50 to 125cc, M/C >125 to 500cc and M/C >500cc

P2W user casualty rates and changes in P2W usage in Greater London

In order to gain a clearer picture of the extent of the P2W collision issues in London, it is important to look at casualty numbers in relation to P2W 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.

Fig. 4: Radial 24 hour motorcycle movements in London, both directions combined, 1980-2005

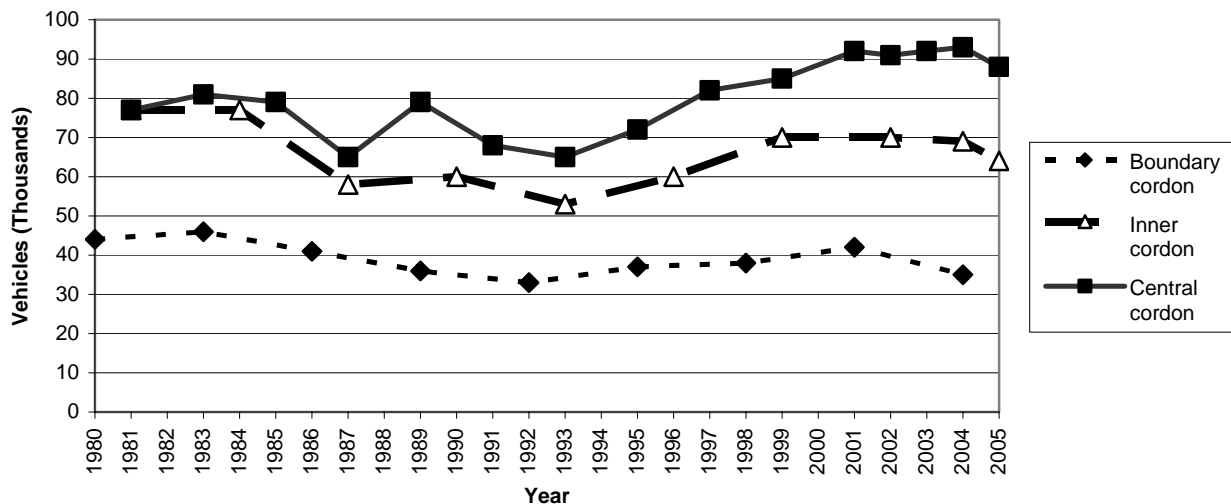


Figure 4 shows the radial cordons, combined direction, 24-hour P2W movements between 1980 and 2005. Flows across the London boundary cordon have reduced by 20% between 1980 and 2004. Within this period P2W movements have fluctuated, falling to a low of 33,000 vehicles in 1992 and rising to 42,000 in 2001. Numbers fell again to 35,000 in 2004. A similar pattern is evident in flows across the inner cordon, with an overall reduction of 17% between 1982 and 2005. In contrast P2W flows across the central cordon have increased by 14% between 1981 and 2005.

Figures 5a and 5b show the number of P2Ws licensed against P2W user casualties and P2W user KSI casualties per 1,000 P2W vehicles licensed. These clearly illustrate that while the number of P2Ws licensed has been increasing steadily since 1995, the casualty rate per 1,000 P2W licensed has been decreasing.

Fig. 5a: P2W user casualties per 1,000 P2W vehicles licensed in Greater London 1986 to 2005

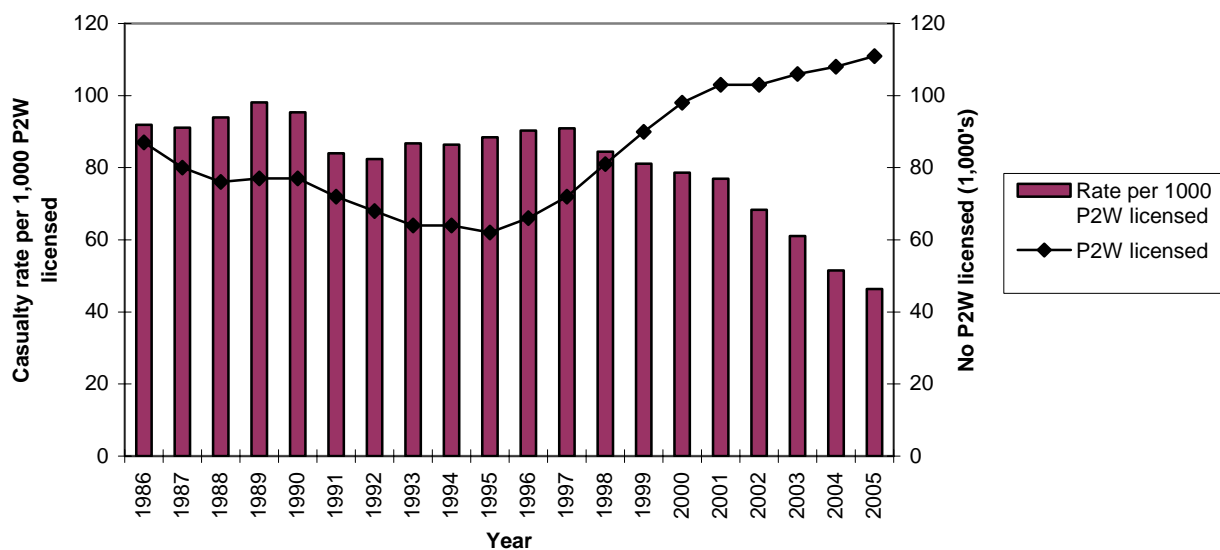


Fig. 5b: P2W user KSI casualties per 1,000 P2W vehicles licensed in Greater London 1986 to 2005

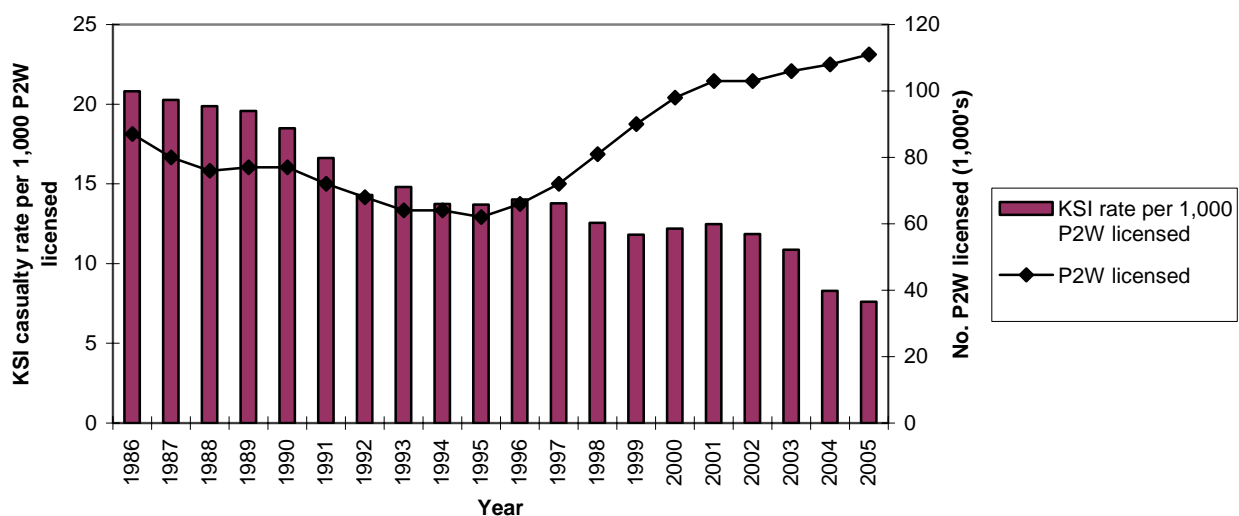
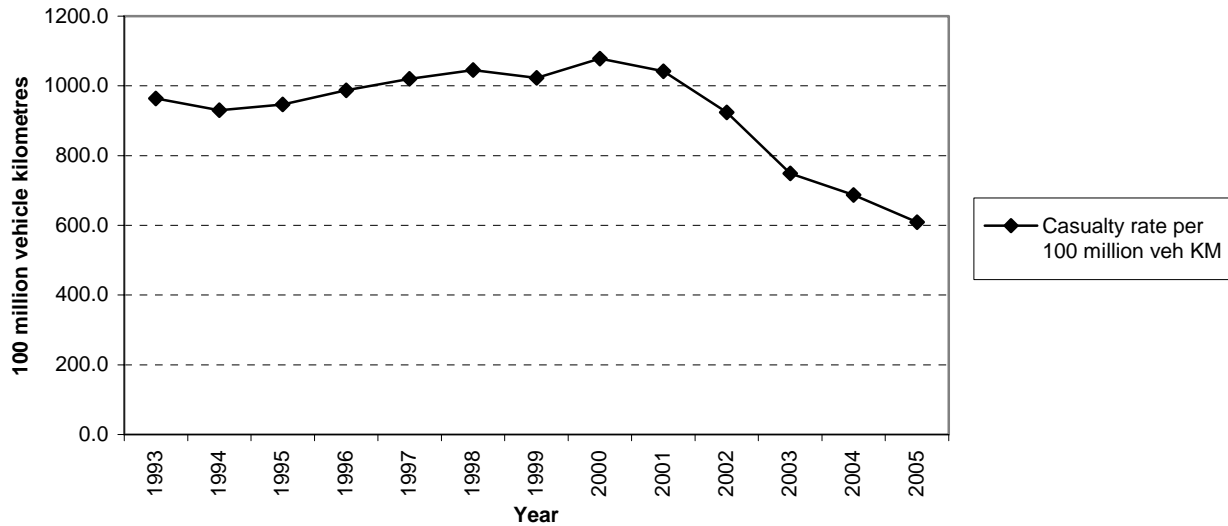


Figure 6 shows P2W user casualty rates per 100 million vehicle kilometres travelled by P2W in Greater London 1993 to 2005. This clearly illustrates the steady fall in the casualty rate since 2000.

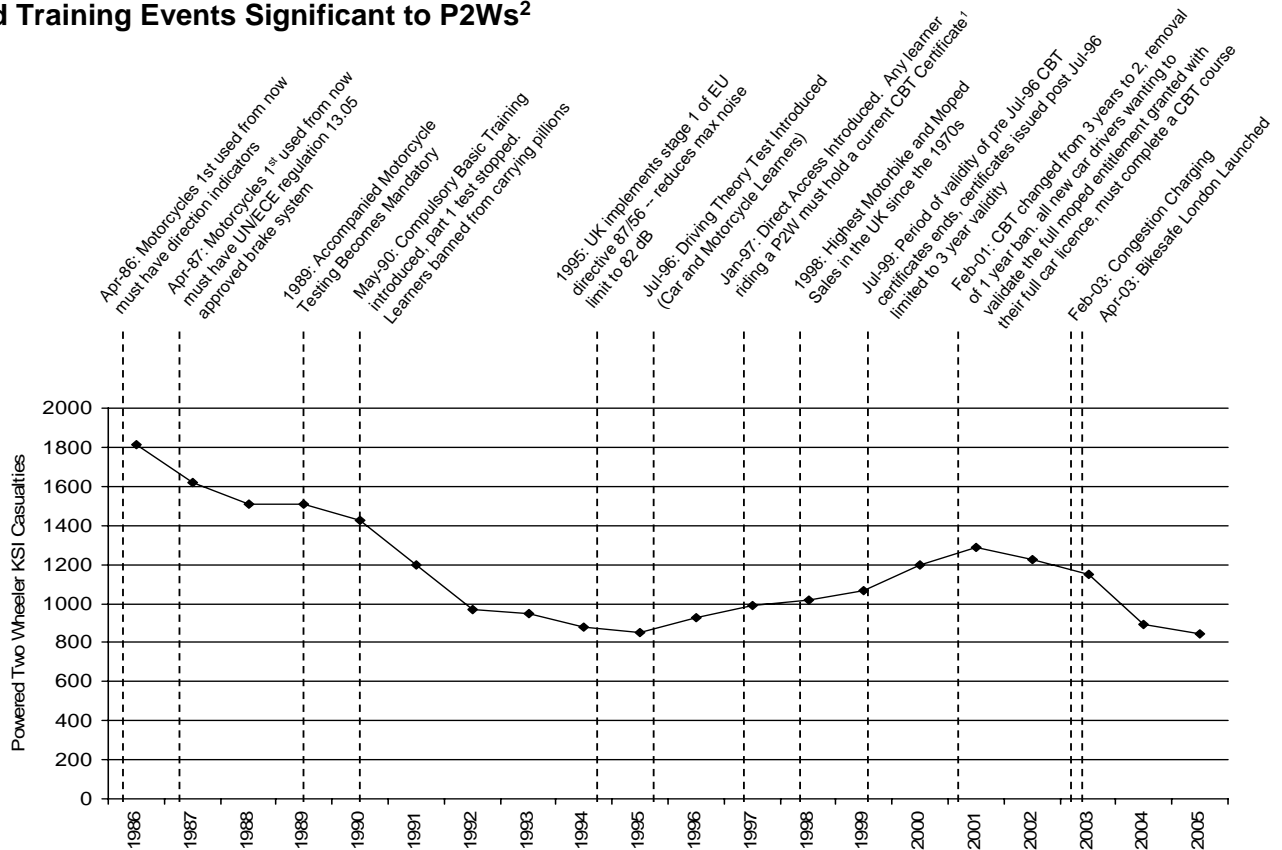
Fig. 6: P2W user casualty rate per 100 million vehicle kilometres in Greater London 1993 to 2005



Timeline

The timeline below sets P2W user KSI casualties against significant changes in legislation and training related to P2Ws.

Fig. 7: P2W KSI Casualties 1986-2003P Overlaid With Selected Legislative and Training Events Significant to P2Ws²



1 Unless they are on the road riding element of an approved CBT Course.
 2 Two year restriction on provisional motorcycle licences introduced in 1982

Sources: Bikesafe London, DfT, DSA, DVLA, Bikermag, BMF, Sportsbike.org, Scottish Executive

Powered two wheeler user casualties in Greater London in 2005

The remainder of this fact sheet provides a more detailed analysis of P2W user casualties in Greater London in 2005. This is the most recent year for which finalised data is available.

How many?

During 2005 there were 26,742 personal injury road traffic collisions reported to the police in the Greater London area. Of these collisions, 4,978 (19%) involved injury to P2W users (rider or passenger) and resulted in 5,142 P2W user casualties. P2W users represented 16% of the total casualties in Greater London in 2005. In contrast, in Great Britain as a whole, P2W user casualties accounted for 9% of all casualties in 2005.

Table 4 shows P2W user casualties by gender, casualty class and severity in Greater London in 2005. The majority of P2W casualties were slightly injured (83.6%), with 15.6% suffering serious injury and 0.9% being killed. In total, P2W user casualties killed or seriously injured accounted for 23% of all road user KSIs in Greater London.

90% of P2W user casualties were male, compared with just 10% female. 96% were riders, of these 92% were male and 8% female. Of the 4% P2W passenger casualties 41% were male and 59% female.

Table 4: P2W user casualties by casualty class, gender, severity & severity ratio in Greater London 2005

		Severity of casualty			Total	Severity ratio
		Fatal	Serious	Slight		
Male	Rider	40	719	3,755	4,514	17%
	Passenger	1	19	69	89	22%
	Total	41	738	3,824	4,603	17%
Female	Rider	1	48	363	412	12%
	Passenger	2	15	110	127	13%
	Total	3	63	473	539	12%
All	Rider	41	767	4,118	4,926	16%
	Passenger	3	34	179	216	17%
	Total	44	801	4,297	5,142	16%

Who?

Age and gender

Table 5 and Figure 8 show the number of P2W user casualties by five-year age groups, gender and severity. Table 6 gives a more detailed breakdown of P2W user casualties aged between 16 and 24 years.

Over three quarters (77%) of P2W user casualties of known age were between 15 and 39 years. The highest numbers occurred in the 25-29 and 30-34 year age bands which together represented over one third (35%) of casualties of known age. More than a quarter (27%) of P2W user casualties of known age were aged between 16 and 24 years, highlighting young riders as another area for concern. There were more male casualties than female in all age bands.

The highest severity ratios were found in the youngest and oldest age groups. The peak was 27% in the 10-14 year group, with the 5-9 and 75-79 year groups each having a severity ratio of 25%. This is partly due to the very low numbers of casualties in these groups, but highlights the increased vulnerability to injury of these age groups.

Table 5: P2W casualties by age-band, gender, severity and severity ratio in Greater London 2005

Casualty age	Gender		Severity of casualty			Total	% of known age	Severity ratio
	Male	Female	Fatal	Serious	Slight			
0-4	0	0	0	0	0	0	-	-
5-9	3	1	0	1	3	4	0%	25%
10-14	22	4	0	7	19	26	1%	27%
15-19	628	45	5	116	552	673	14%	18%
20-24	586	87	9	92	572	673	14%	15%
25-29	710	125	8	130	697	835	17%	17%
30-34	753	112	4	125	736	865	18%	15%
35-39	636	70	7	107	592	706	14%	16%
40-44	469	28	5	79	413	497	10%	17%
45-49	234	22	2	45	209	256	5%	18%
50-54	159	13	1	26	145	172	4%	16%
55-59	100	8	2	19	87	108	2%	19%
60-64	40	3	0	6	37	43	1%	14%
65-69	15	1	0	2	14	16	0%	13%
70-74	4	1	0	0	5	5	0%	0%
75-79	4	0	1	0	3	4	0%	25%
80-84	1	0	0	0	1	1	0%	0%
85-89	0	0	0	0	0	0	-	-
90-94	0	0	0	0	0	0	-	-
95-99	0	0	0	0	0	0	-	-
Total (age known)	4,364	520	44	755	4,085	4,884	100%	16%
Total (age unknown)	239	19	0	46	212	258	-	18%
Total	4,603	539	44	801	4,297	5,142	-	16%

Fig. 8: P2W user casualties by age-band and severity in Greater London 2005

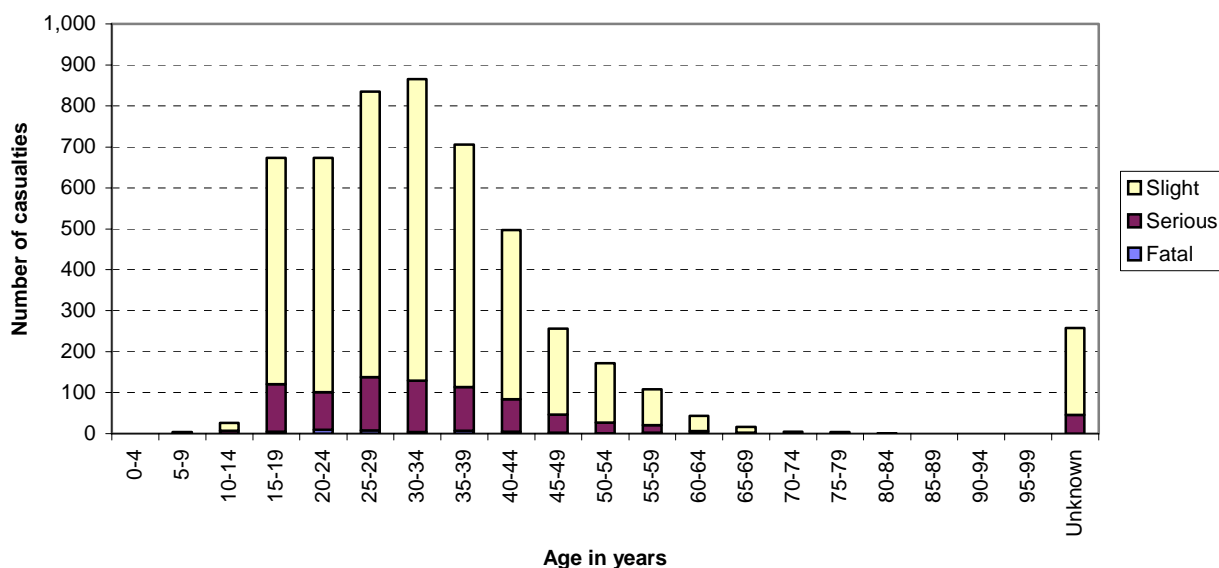


Table 6: Breakdown of P2W user casualties aged between 16 and 24 years of age in Greater London 2005

Casualty age	Severity of casualty					Total
	Male	Female	Fatal	Serious	Slight	
16	173	14	1	32	154	187
17	179	7	2	30	154	186
18-19	252	22	2	48	224	274
20-24	586	87	9	92	572	673
Total aged 16 - 24 years	1,190	130	14	202	1,104	1,320

Where?

Table 7 shows the number of P2W user casualties by borough, severity and percentage change in KSI casualties in 2005 over the 1994-98 average.

Just over half (55%) of all P2W user casualties were injured on roads in inner London, this included 54% of all serious P2W injuries and 56% of all slight. However, the majority (57%) of P2W fatalities occurred on roads in outer London.

While slightly more P2W users were injured in inner London, the average severity ratio in outer London was slightly higher (17% compared with 16%).

Regarding progress towards the 2010 casualty reduction targets, KSI casualties in outer London showed the greater reduction between 2005 and the 1994-98 average, falling by 12% compared with 7% in inner London.

Table 7: P2W user casualties by borough, severity and KSI percentage change in 2005 over 1994-98 average in Greater London

Borough	Fatal	Serious	Slight	Total	Severity ratio	1994-98 KSI average	2005 KSI total	% change 1994-98 average to 2005 KSI
City of London	0	10	65	75	13%	15.2	10	-34%
Westminster	2	48	298	348	14%	64.8	50	-23%
Camden	1	32	201	234	14%	41	33	-20%
Islington	0	20	164	184	11%	31.8	20	-37%
Hackney	0	30	139	169	18%	25	30	20%
Tower Hamlets	2	41	181	224	19%	37.8	43	14%
Greenwich	1	32	121	154	21%	30	33	10%
Lewisham	1	33	167	201	17%	30	34	13%
Southwark	2	30	197	229	14%	47.4	32	-32%
Lambeth	0	50	248	298	17%	51.2	50	-2%
Wandsworth	2	43	221	266	17%	53.4	45	-16%
Hammersmith & Fulham	5	29	198	232	15%	26.2	34	30%
Kensington & Chelsea	3	33	203	239	15%	31	36	16%
Total inner London	19	431	2,403	2,853	16%	484.8	450	-7%
% of Greater London	43%	54%	56%	55%	-	-	-	-
Waltham Forest	1	17	78	96	19%	19.4	18	-7%
Redbridge	2	12	79	93	15%	14.4	14	-3%
Havering	1	9	70	80	13%	19.8	10	-49%
Barking & Dagenham	1	12	63	76	17%	13.2	13	-2%
Newham	0	12	82	94	13%	17.6	12	-32%
Bexley	0	21	63	84	25%	17.2	21	22%
Bromley	4	29	116	149	22%	33.4	33	-1%
Croydon	1	25	165	191	14%	31.2	26	-17%
Sutton	0	16	72	88	18%	16	16	0%
Merton	0	11	92	103	11%	21.2	11	-48%
Kingston	1	11	63	75	16%	22.2	12	-46%
Richmond	0	20	99	119	17%	24.2	20	-17%
Hounslow	5	28	105	138	24%	28	33	18%
Hillingdon	1	17	94	112	16%	25.4	18	-29%
Ealing	0	25	150	175	14%	32	25	-22%
Brent	0	22	125	147	15%	24.6	22	-11%
Harrow	1	10	47	58	19%	12	11	-8%
Barnet	3	35	149	187	20%	34	38	12%
Haringey	0	16	96	112	14%	21	16	-24%
Enfield	4	22	86	112	23%	21.2	26	23%
Total outer London	25	370	1,894	2,289	17%	448	395	-12%
% of Greater London	57%	46%	44%	45%	-	-	-	-
Total Greater London	44	801	4,297	5,142	16%	932.8	845	-9%

Table 8 shows P2W user casualties by borough, casualty class and age group for Greater London in 2005. 55% of all P2W rider casualties and 57% of all P2W passenger casualties were injured in inner London.

With regard to age, 61% of all P2W user casualties in the 25-59 years age group were injured in inner London, while the majority of casualties in the under 16, 16-24 and 60 years and over age groups were injured in outer London (52%, 57% and 62% respectively).

Table 8: P2W casualties by borough, casualty class and age group in Greater London 2005

Borough	Casualty class		Casualty age (banded)				Unknown	Total
	P2W Rider	Passenger	Under 16	16-24	25-59	60 + over		
City of London	72	3	0	11	61	1	2	75
Westminster	336	12	2	52	270	7	17	348
Camden	220	14	1	44	179	2	8	234
Islington	178	6	0	42	135	3	4	184
Hackney	160	9	5	36	120	0	8	169
Tower Hamlets	216	8	3	46	158	1	16	224
Greenwich	147	7	4	40	102	2	6	154
Lewisham	193	8	1	55	141	0	4	201
Southwark	221	8	1	63	149	1	15	229
Lambeth	285	13	2	49	230	1	16	298
Wandsworth	260	6	3	53	193	3	14	266
Hammersmith & Fulham	216	16	4	44	171	2	11	232
Kensington & Chelsea	226	13	1	33	193	3	9	239
Total inner London	2,730	123	27	568	2,102	26	130	2,853
% of Greater London	55%	57%	48%	43%	61%	38%	50%	55%
Waltham Forest	91	5	1	25	63	1	6	96
Redbridge	90	3	1	24	56	6	6	93
Havering	79	1	1	31	41	3	4	80
Barking & Dagenham	74	2	1	31	40	0	4	76
Newham	87	7	2	24	61	0	7	94
Bexley	82	2	1	40	37	3	3	84
Bromley	142	7	2	49	77	5	16	149
Croydon	182	9	3	73	98	4	13	191
Sutton	86	2	0	39	43	1	5	88
Merton	100	3	2	34	59	3	5	103
Kingston	73	2	0	33	41	0	1	75
Richmond	113	6	2	40	68	4	5	119
Hounslow	134	4	1	46	80	3	8	138
Hillingdon	106	6	3	40	64	0	5	112
Ealing	172	3	3	48	113	2	9	175
Brent	137	10	3	38	96	2	8	147
Harrow	56	2	0	23	33	1	1	58
Barnet	179	8	1	48	127	1	10	187
Haringey	104	8	1	32	71	2	6	112
Enfield	109	3	1	34	69	2	6	112
Total outer London	2,196	93	29	752	1,337	43	128	2,289
% Greater London	45%	43%	52%	57%	39%	62%	50%	45%
Total Greater London	4,926	216	56	1,320	3,439	69	258	5,142

Table 9 shows P2W user casualties by highway authority and severity. Two thirds of injuries (66%) occurred on borough roads. These accounted for 70% of fatalities, 64% of serious and 67% of slight casualties. 33% of P2W casualties were injured on the Transport for London Road Network (TLRN). Those injured on Highways Agency (HA) roads displayed the highest severity ratio, 31%, compared with 17% on the TLRN and 16% on borough roads, however casualties on HA roads (motorways) accounted for only 0.5% of the total P2W user casualties.

Table 9: P2W user casualties by highway authority, severity and severity ratio in Greater London 2005

	Severity of casualty			Total	% of total	Severity ratio
	Fatal	Serious	Slight			
TLRN	13	284	1,411	1,708	33.2%	17%
Highways Agency Road	0	8	18	26	0.5%	31%
Borough Road	31	509	2,868	3,408	66.3%	16%
Total	44	801	4,297	5,142	100.0%	16%

Table 10 shows P2W user casualties by road class and severity. 67% occurred on 'A' class roads, 24% on 'C' class or unclassified roads, 8% on 'B' class roads and less than 1% on motorways. The highest severity ratio (31%) was recorded on motorways, while casualties injured in 'A' class roads had a severity ratio of 16%. The vast majority of P2W user casualties (93%) were injured on roads subject to a 30mph speed limit.

Table 10: P2W user casualties by road class, severity and severity ratio in Greater London 2005

First road class	Severity of casualty			Total	% of total	Severity ratio
	Fatal	Serious	Slight			
Motorway	0	8	18	26	0.5%	31%
A	26	517	2,908	3,451	67.1%	16%
B	2	75	357	434	8.4%	18%
C	6	91	500	597	11.6%	16%
Unclassified	10	110	514	634	12.3%	19%
Total	44	801	4,297	5,142	100.0%	16%

Table 11 shows P2W user casualties by junction detail and junction control. 75% of these casualties were injured at or within 20m of a junction. Of these, 63% were injured at 'T' or staggered junctions and 20% at crossroads. Of those injured at a junction, 78% occurred where the junction control was 'Give Way' and 21% were at a junction controlled by automatic traffic signals.

Table 11: P2W user casualties by junction control and junction detail in Greater London 2005

Junction detail	Junction control					Total
	Not applicable	Authorised Person	Automatic Traffic Signals	Stop Sign	Give Way or Uncontrolled	
Roundabout	0	1	33	0	154	188
Mini-Roundabout	0	0	0	0	62	62
T & Staggered Jct	0	5	269	7	2,140	2,421
Slip Road	0	0	1	0	50	51
Crossroads	0	0	443	2	330	775
Multi Junction	0	0	66	0	30	96
Private Drive	0	1	3	0	204	208
Other	0	0	11	0	37	48
Total at junctions	0	7	826	9	3,007	3,849
No junction in 20m	1,293	0	0	0	0	1,293
Total	1,293	7	826	9	3,007	5,142

Road surface/weather

The majority of P2W user casualties (79%) were injured on a dry road surface and in fine weather conditions (86%).

10% of P2W user casualties were injured in an collision where their vehicle skidded. The severity ratio for these casualties was higher at 22% than that for those who did not skid (16%). 18% of those injured on a wet road surface and 25% of those on a surface with snow, frost or ice involved the P2W skidding.

What is the cost?

Based on the average cost of motorised two wheeler rider and passenger casualties as detailed in Department for Transport Highways Economics Note No.1, the cost to the community of P2W user casualties in 2005 is estimated at around £413 million at June 2005 prices. P2W casualties averaged 14 per day in Greater London in 2005, with a subsequent cost to the community of approximately £1.1 million per day.

When?

Figures 9, 10 and 11 show the number of P2W user casualties by time of day, day of week and month in Greater London in 2005. They also indicate the proportions occurring in the light or during the hours of darkness.

Time of day

Three quarters (75%) of P2W user casualties were injured between 7am and 7pm. Within this 12 hour period there were two clear peaks, with over a third (38%) of all P2W casualties occurring between 3pm and 7pm and 21% between 7am and 10am. The single highest hour was between 5pm and 6pm (10%) followed by 8am to 9am (9%). 72% of P2W user casualties were injured during daylight hours.

Day of week

81% of P2W user casualties were injured on a week day, an average of 16% per day, with 11% on Saturday and 8% on Sunday. However, the highest proportion of P2W user casualties injured in the dark occurred at the weekend with 32% on Saturdays and 35% on Sundays.

Month

The highest number of P2W user casualties (10%) were recorded in June and the lowest number in February and December (each 7%). 53% occurred during the spring-summer period (April to September) compared to 47% in the autumn-winter months. 40% or more of collisions in February, November and December occurred in the dark.

Fig. 9: P2W casualties by time and light conditions in Greater London 2005

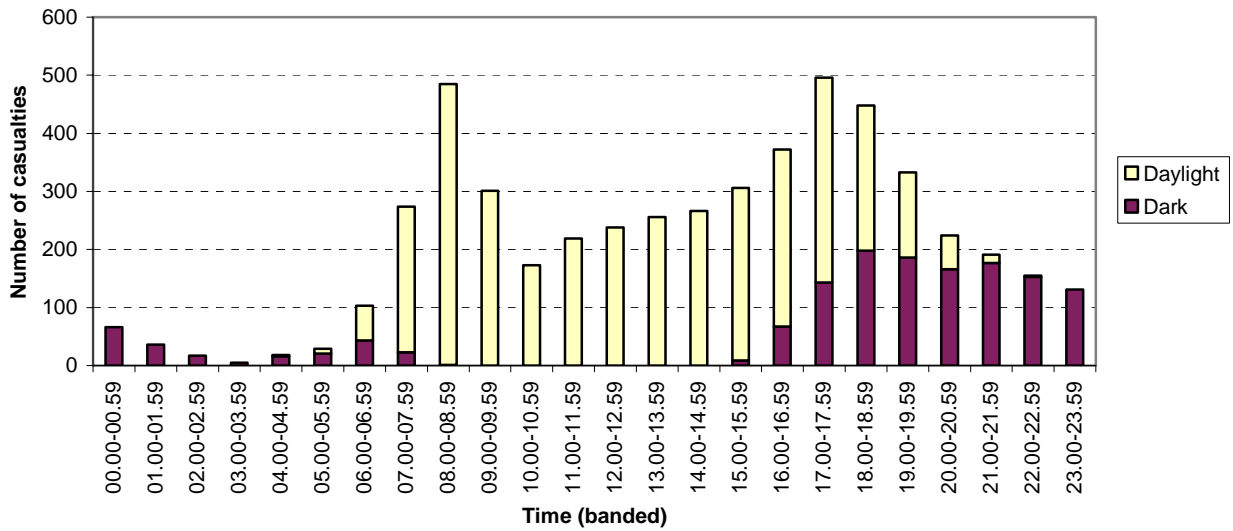


Fig. 10: P2W user casualties by day and light conditions in Greater London 2005

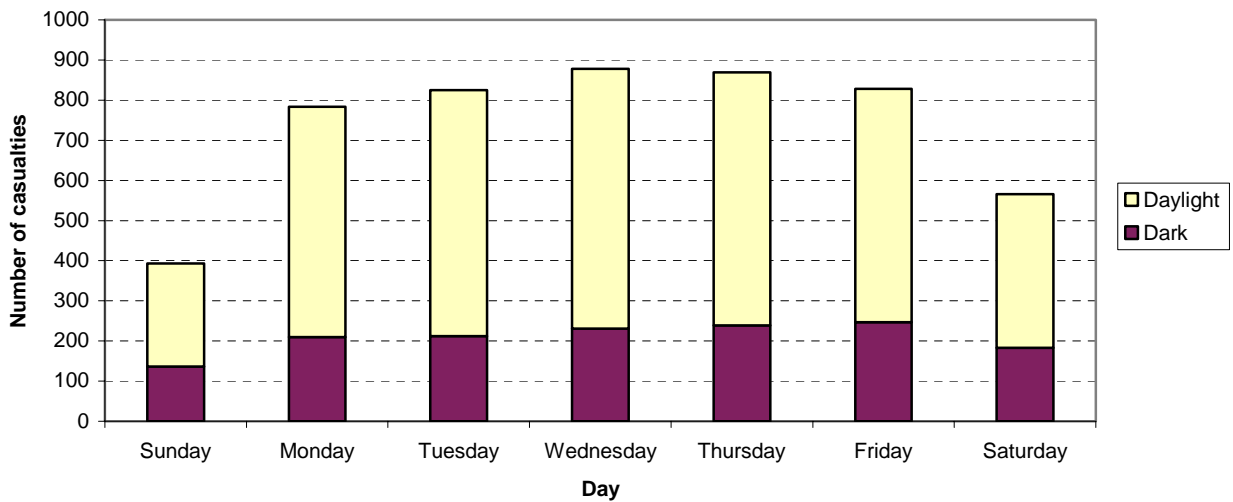
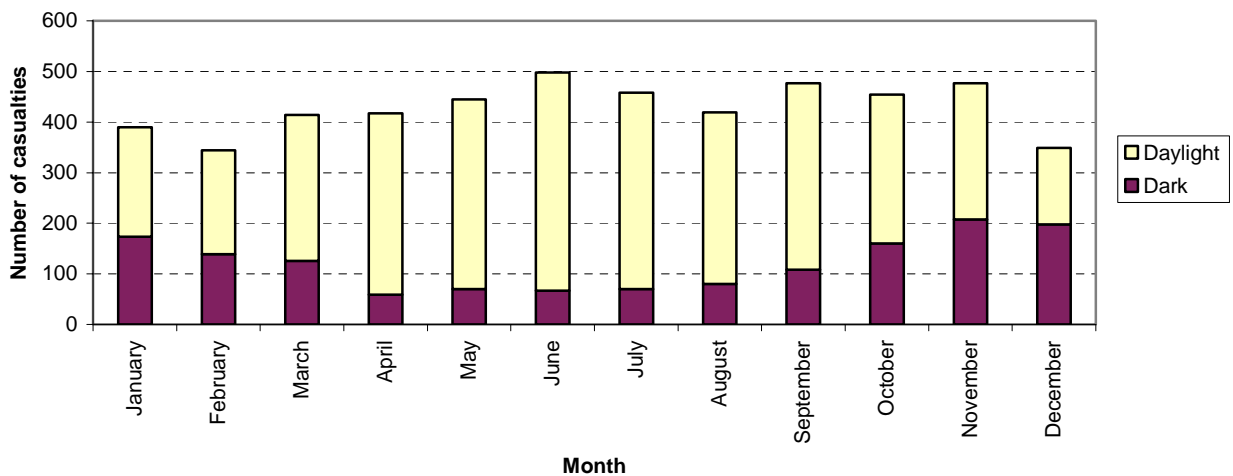


Fig. 11: P2W user casualties by month and light conditions in Greater London 2005



P2W vehicle type

Table 12 shows P2W user casualties by vehicle type, gender and severity. Overall casualties were quite evenly distributed between the four categories of P2W vehicle, with the two smaller engine categories each having 25% of the total, the 125-500cc category 22% and the over 500cc category 29%.

In terms of KSI casualties the differences between categories becomes more marked, with a third (33%) of KSI casualties (45% fatal, 32% serious) being injured on motor cycles with engines over 500cc. This group also had the highest severity ratio (19%).

At least 85% of P2W user casualties in each vehicle category were male and this percentage increased with engine size.

Table 12: P2W user casualties by vehicle type, gender and severity in Greater London 2005

P2W type	Casualty gender		Casualty severity			Total	% of total	Severity ratio
	Male	Female	Fatal	Serious	Slight			
M/C <50cc	1074	186	5	154	1101	1,260	25%	13%
M/C >50cc up to 125cc	1127	143	9	199	1062	1,270	25%	16%
M/C >125cc up to 500cc	1032	108	10	193	937	1,140	22%	18%
M/C >500cc	1370	102	20	255	1197	1,472	29%	19%
All P2W	4,603	539	44	801	4,297	5,142	100%	16%

Vehicle manoeuvre

Table 13 shows P2W user casualties by vehicle manoeuvre and severity. Two thirds (69%) of P2W user casualties were injured when the P2W was 'going ahead'. The next most common manoeuvre (17%) involved the P2W performing an 'overtaking manoeuvre'.

Table 13: P2W user casualties by vehicle manoeuvre, severity and severity ratio in Greater London 2005

Vehicle manoeuvre	Severity of casualty			Total	% of total	Severity ratio
	Fatal	Serious	Slight			
Reversing	0	1	4	5	0%	20%
Parked	0	0	15	15	0%	0%
Going Ahead But Held Up	0	7	75	82	2%	9%
Stopping	0	25	145	170	3%	15%
Starting	1	2	49	52	1%	6%
U-Turn	0	3	18	21	0%	14%
Turning Left	0	17	100	117	2%	15%
Waiting to Turn Left	0	1	6	7	0%	14%
Turning Right	2	26	172	200	4%	14%
Waiting to Turn Right	0	6	15	21	0%	29%
Changing Lane To Left	0	6	16	22	0%	27%
Changing Lane To Right	1	7	27	35	1%	23%
Overtaking Moving Veh Offside	1	90	448	539	10%	17%
Overtaking Stat Veh Offside	0	25	149	174	3%	14%
Overtaking Nearside	2	30	125	157	3%	20%
Going Ahead Left Bend	4	24	64	92	2%	30%
Going Ahead Right Bend	0	12	75	87	2%	14%
Going Ahead Other	33	519	2,794	3,346	65%	16%
Total	44	801	4,297	5,142	100%	16%

Common conflicts in P2W KSI collisions

Tables 14 and 15 show a listing of the main types of conflicts occurring in collisions resulting in fatal or serious injury to a P2W user. The tables include a simple sketch representation of the conflict between the P2W (shown as a broken line) and the other vehicle(s) involved (shown as a solid line). The information included in the tables was compiled from a manual analysis of the details of each P2W KSI collision.

Table 14 (fatal) summary


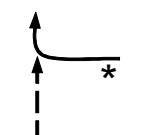
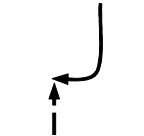
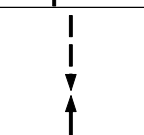
The most common collision type (9 out of 41, 22%) resulting in fatal injury involved a P2W losing control, mounting the kerb and hitting a road side object or street furniture. No other vehicles were involved in these collisions.

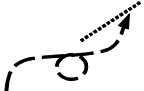

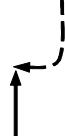

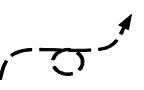


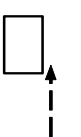
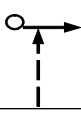
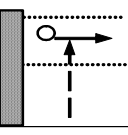

A further 10% of collisions involved a P2W losing control and hitting a kerb or barrier, 10% involved a P2W losing control while overtaking and colliding with another vehicle and a further 2% involved a P2W losing control and hitting another vehicle. Therefore a total of 18 out of the 41 fatal P2W collisions (44%) involved the P2W losing control.

12% (5 out of 41) of fatal P2W collisions involved another vehicle disobeying the junction control and turning right into the path of the P2W from a side road, and a further 10% involved another vehicle turning right across the path of the P2W from the opposite direction. 10% of P2W users died in a head on collision.

In 46% of fatal P2W collisions the P2W was in conflict with a car. There were no other vehicles involved in 37% of collisions.

Table 14: Ranked analysis of the most commonly occurring conflicts between vehicles in accidents resulting in a powered two wheeler user being fatally injured in London during 2005

Conflict between powered two wheeler and:													
Conflict	Description	Powered 2 wheeler	Pedal cyclist	Car	Taxi	Goods under 3.5t	Goods over 3.5t	Bus or coach	Other vehicle	No other vehicle	Multiple vehicle *	Total Collisions	%
	P2W loses control, mounts kerb & hits road side object or street furniture	0	0	0	0	0	0	0	0	9	0	9	22%
	Other vehicle disobeys junction control and turns right into path of P2W	0	0	5	0	0	0	0	0	0	0	5	12%
	Other vehicle turns right across path of P2W	0	0	3	0	0	0	0	1	0	1	4	10%
	Head on collision between P2W and other vehicle	0	0	2	0	1	1	0	0	0	0	4	10%

Conflict between powered two wheeler and:													
Conflict	Description	Powered 2 wheeler	Pedal cyclist	Car	Taxi	Goods under 3.5t	Goods over 3.5t	Bus or coach	Other vehicle	No other vehicle	Multiple vehicle *	Total Collisions	%
	P2W loses control - and hits kerb, barrier or wall etc.	0	0	0	0	0	0	0	0	4	0	4	10%
	P2W loses control while overtaking and collides with other vehicle or object	0	0	1	0	1	1	1	0	0	0	4	10%
	P2W turns right across path of other vehicle	0	0	2	0	0	0	0	0	0	0	2	5%
	Other vehicle disobeys junction control and turns left into path of P2W	0	0	2	0	0	0	0	0	0	1	2	5%
	P2W loses control (and may hit other vehicle)	0	0	1	0	0	0	0	0	0	1	1	2%
	Other vehicle u-turns into path of P2W	0	0	1	0	0	0	0	0	0	0	1	2%
	P2W performs overtaking manoeuvre into path of right turning vehicle	0	0	1	0	0	0	0	0	0	0	1	2%
	P2W hits parked vehicle	0	0	1	0	0	0	0	0	0	1	1	2%
	P2W strikes pedestrian not at or within 50m of a formal pedestrian crossing - crossing road	0	0	0	0	0	0	0	0	1	0	1	2%
	P2W strikes pedestrian at or within 50m of a formal pedestrian crossing	0	0	0	0	0	0	0	0	1	0	1	2%
	Vehicle reverses into powered two wheeler	0	0	0	0	1	0	0	0	0	0	1	2%
	Total	0	0	19	0	3	2	1	1	15	4	41	100%

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


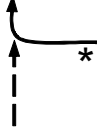

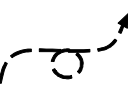



Table 15 (serious) summary










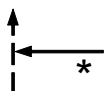
15% (120 out of 785) of collisions resulting in serious injury to a P2W user involved another vehicle turning right across the path of a P2W from the opposite direction, and a further 14% involved a vehicle disobeying the junction control and turning right across the path of a P2W from a side road. 7% involved a vehicle U-turning across the P2W's path.



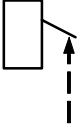



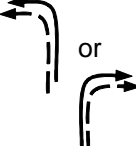

A total of 16% of collisions where a P2W user was seriously injured involved the P2W losing control or braking/swerving to avoid a collision.

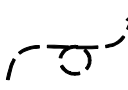
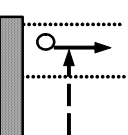
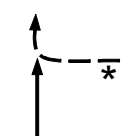
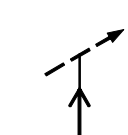
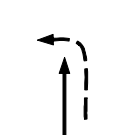
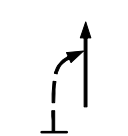
In 71% of serious P2W collisions, the P2W was in conflict with a car.

Table 15: Ranked analysis of the most commonly occurring conflicts between vehicles in accidents resulting in a powered two wheeler user being seriously injured in London during 2005

Conflict between powered two wheeler and:													
Conflict	Description	Powered 2 wheeler	Pedal cyclist	Car	Taxi	Goods under 3.5t	Goods over 3.5t	Bus or coach	Other vehicle	No other vehicle	Multiple vehicle *	Total Collisions	%
	Other vehicle turns right across path of P2W	1	0	106	2	7	1	2	1	0	4	120	15%
	Other vehicle disobeys junction control and turns right into path of P2W	1	0	99	2	8	1	1	1	0	8	113	14%
	Other vehicle u-turns into path of P2W	0	0	44	5	7	0	0	1	1	3	58	7%
	P2W loses control (and may hit other vehicle)	0	0	11	0	0	0	1	0	36	0	48	6%
	Other vehicle changes lane (o/s or n/s) across the path of P2W	0	1	32	1	5	2	0	2	0	5	43	5%
	Head on collision between P2W and other vehicle	3	0	30	2	2	1	2	1	0	4	41	5%
	P2W runs into rear of other vehicle	0	2	30	0	3	2	0	1	1	5	39	5%

Conflict between powered two wheeler and:													
Conflict	Description	Powered 2 wheeler	Pedal cyclist	Car	Taxi	Goods under 3.5t	Goods over 3.5t	Bus or coach	Other vehicle	No other vehicle	Multiple vehicle *	Total Collisions	%
	P2W performs overtaking manoeuvre into path of right turning vehicle	0	1	29	0	1	0	0	0	0	3	31	4%
	P2W brakes and/or swerves to avoid collision	0	0	6	0	3	0	1	0	15	0	25	3%
	Other vehicle disobeys junction control and turns left into path of P2W	0	0	19	0	1	2	1	0	0	1	23	3%
	P2W loses control - and hits kerb, barrier or wall etc.	0	0	3	0	1	1	1	0	17	1	23	3%
	Other vehicle runs into rear of P2W	0	0	17	0	1	2	0	1	0	5	21	3%
	P2W fails to give way or disobeys junction control and collides with other vehicle	1	0	17	0	0	0	1	0	0	2	19	2%
	Other vehicle starts off or pulls out into path of P2W	0	0	13	3	2	1	0	0	0	0	19	2%
	P2W collides with other vehicle or loses control while overtaking	0	0	12	0	3	1	0	0	0	4	16	2%
	P2W hits parked vehicle	0	0	13	0	2	1	0	0	0	3	16	2%
	Other vehicle fails to give way or disobeys junction control and collides with P2W	0	0	14	0	1	0	0	0	0	0	15	2%

Conflict between powered two wheeler and:													
Conflict	Description	Powered 2 wheeler	Pedal cyclist	Car	Taxi	Goods under 3.5t	Goods over 3.5t	Bus or coach	Other vehicle	No other vehicle	Multiple vehicle *	Total Collisions	%
	P2W strikes pedestrian not at or within 50m of a formal pedestrian crossing - crossing road	0	0	0	0	0	0	0	0	11	0	11	1%
	P2W loses control, mounts kerb & hits road side object or street furniture	0	0	3	0	0	0	0	0	8	0	11	1%
	P2W hits open door / swerves to avoid open door of other vehicle.	0	0	10	0	1	0	0	0	0	3	11	1%
	Other vehicle turns left across the path of P2W user	0	0	6	0	1	1	0	1	0	1	9	1%
Various	other P2W accidents	0	0	5	0	1	0	0	1	2	1	9	1%
	P2W changes lane (o/s or n/s) across path of other vehicle	1	0	7	1	0	0	0	0	0	2	9	1%
	P2W turns right across path of other vehicle	0	0	8	0	0	0	0	0	0	0	8	1%
	P2W and other vehicle collide when both turning left or right	0	0	6	0	0	0	1	1	0	0	8	1%
	P2W and other vehicle travelling too close alongside each other	0	0	6	0	1	0	1	0	0	1	8	1%
No details	No details	1	0	2	0	0	0	0	0	4	0	7	1%

Conflict between powered two wheeler and:													
Conflict	Description	Powered 2 wheeler	Pedal cyclist	Car	Taxi	Goods under 3.5t	Goods over 3.5t	Bus or coach	Other vehicle	No other vehicle	Multiple vehicle *	Total Collisions	%
	P2W loses control - and may hit other vehicle- (road surface condition)	0	0	0	0	0	0	0	0	7	0	7	1%
	P2W strikes pedestrian at or within 50m of a formal pedestrian crossing	0	0	0	0	0	0	0	0	7	0	7	1%
	P2W disobeys junction control and turns right into path of other vehicle	0	0	5	0	0	0	0	0	0	1	5	1%
	Vehicle reverses into powered two wheeler	0	0	2	0	0	0	0	0	0	1	2	0%
	P2W turns left across the path of other vehicle	0	0	2	0	0	0	0	0	0	0	2	0%
	P2W starts off or pulls out into path of other vehicle	0	0	1	0	0	0	0	0	0	0	1	0%
	Total	8	4	558	16	51	16	12	11	109	58	785	100%

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

Comparative casualty rates by vehicular mode of travel

Table 16 shows comparative casualty rates by vehicular mode of travel for vehicle types where vehicle kilometre data is available. This gives a good indication of the relative risk to occupants of different vehicle types.

P2Ws had the highest casualty rate per 100 million vehicle kilometres (608.8 for all severities, 100 for KSIs and 508.8 for slight). P2Ws represented 2.5% of the estimated vehicle kilometres travelled. When compared with the rate for cars and taxis (57.8 for all severities, 3.9 for KSIs and 53.9 for slight, with cars/taxis forming 79% of vehicle kilometres travelled), the vulnerability of P2W users becomes even more apparent.

When vehicle occupancy is also taken into account, the relative risk to P2W users compared with car/taxi occupants is even greater. Viewed as a casualty rate per 100 million person kilometres, the P2W user rate does not change, but the rate for car occupants falls to 38.5 for all severities, 2.6 for KSIs and 36 for slight casualties.

Table 16: Comparative casualty rates by vehicular mode of travel in Greater London 2005

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	21	351	2,523	2,895	372	5.855	494.5	63.5	431.0	1.0	494.5	63.5	431.0
Powered two-wheeler	44	801	4,297	5,142	845	8.446	608.8	100.0	508.8	1.0	608.8	100.0	508.8
Car & taxi	54	953	14,098	15,105	1,007	261.356	57.8	3.9	53.9	1.5	38.5	2.6	36.0
Bus or coach	3	126	1,705	1,834	129	6.015	304.9	21.4	283.4	14.7	20.7	1.5	19.3
Goods vehicle	1	51	552	604	52	50.803	11.9	1.0	10.9	1.2	9.9	0.9	9.1
Total#	123	2,282	23,175	25,580	2,405	332.475	76.9	7.2	69.7				

excluding pedestrians and other vehicles.

* Source: DfT National Road Traffic Survey data

† Estimates by TfL Network Performance

Comparison with P2W user casualties in other Metropolitan areas

Table 17 and Figures 12 and 13 compare P2W user casualties in Greater London with those in four of the former Metropolitan Counties for the period 2001 to 2005.

Table 17: P2W user casualties by year and local authority 2001 to 2005

	P2W user casualties									
	Greater London		Greater Manchester		Merseyside		Tyne & Wear		West Midlands	
	KSI	All	KSI	All	KSI	All	KSI	All	KSI	All
1994-98 average	933	6072	127	581	80	324	41	137	201	624
2001	1286	7920	145	844	102	404	55	217	163	726
2002	1222	7041	183	850	123	397	71	266	174	773
2003	1152	6469	180	835	101	372	69	261	208	819
2004	895	5558	177	795	101	342	66	285	168	749
2005	845	5142	191	786	95	327	64	276	187	788
% change 1994-98 average to 2005	-9%	-15%	50%	35%	19%	1%	56%	101%	-7%	26%
% change 2004 to 2005	-6%	-7%	8%	-1%	-6%	-4%	-3%	-3%	11%	5%

As casualty numbers for Greater London are much higher than those for the other local authorities, the graphical data has been presented in the form of indices. The index for each of the data variables included, i.e. the five local authorities, has been set to 100 for whatever their values were for the 1994-98 average so that the year on year change can then be measured on a comparable basis.

While the number of P2W user casualties in Greater London is significantly higher than in the former Metropolitan Counties, London is showing the greatest reductions over the baseline for all P2W user casualties and KSI P2W user casualties.

Fig. 12: All P2W user casualty indices by highway authority

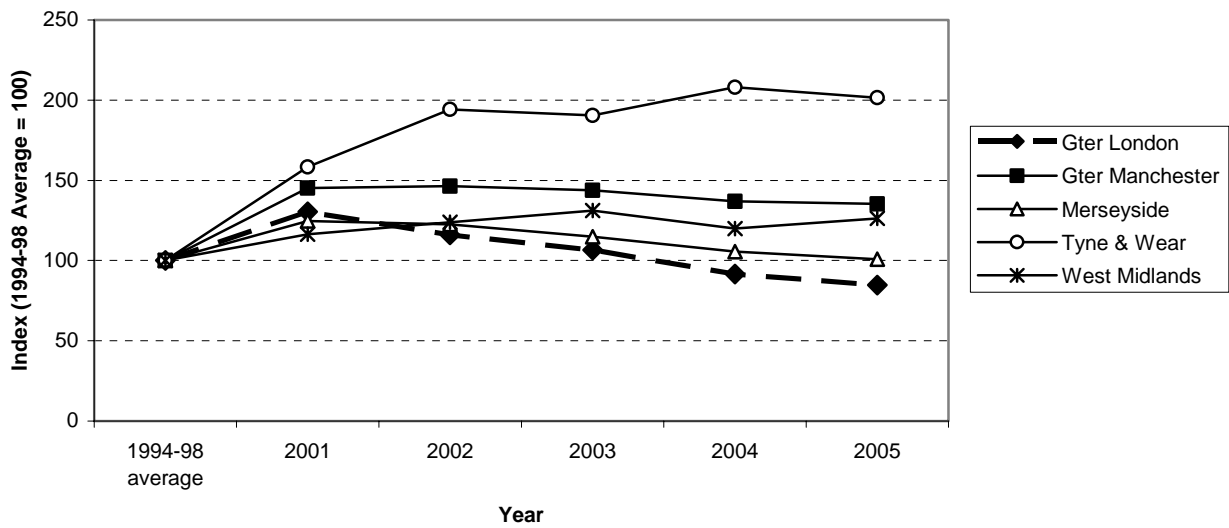
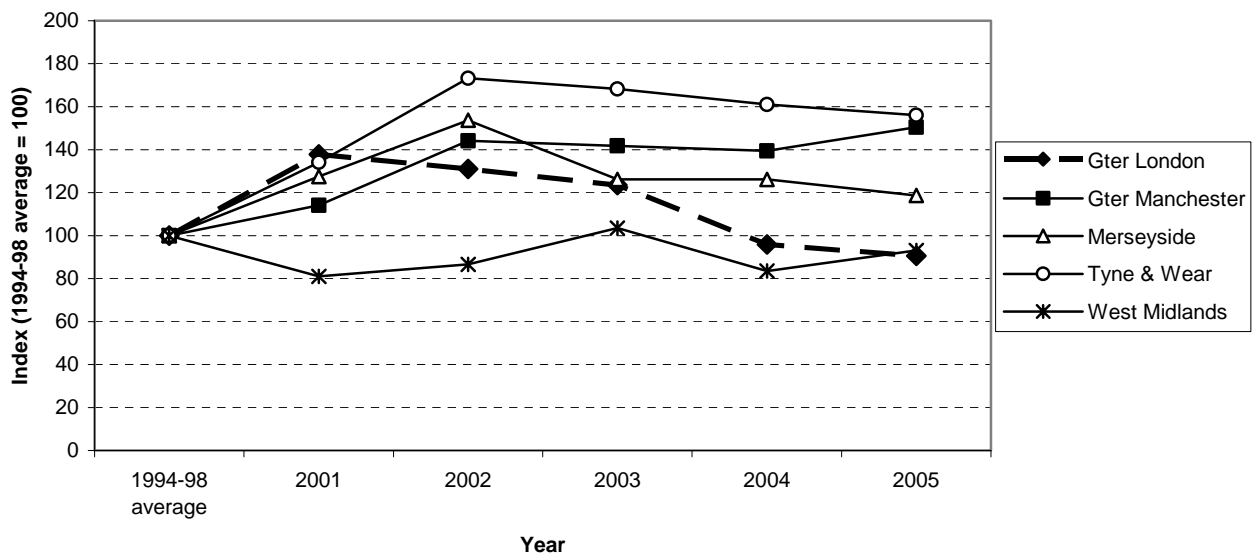


Fig. 13: KSI P2W user casualty indices by highway authority



Background documents

1. Road Casualties Great Britain:2005 Annual Report – DfT (September 2006)
http://www.dft.gov.uk/stellent/groups/dft_transstats/documents/downloadable/dft_transstats_612588.pdf2
2. Highways Economics Note No. 1 2005 – Department for Transport (Jan 2007)
http://www.dft.gov.uk/stellent/groups/dft_rdsafety/documents/page/dft_rdsafety_614125.pdf
3. Radial Traffic Movements in London 1971-2005 TfL (unpublished)
4. DfT National Road Traffic Survey data

Copies of reports and research published by LRSU can be found at -
<http://www.tfl.gov.uk/streets/roadsafety-reports.shtml>

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