THE CITY OF EDINBURGH COUNCIL

Services For Communities

Transport / Road Safety

Bicycle Incident Analysis Report

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22/02/12

Transport/Road Safety

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CONTENTS

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1. INTRODUCTION

1.1. Background

This report looks into the scale and nature of road traffic collisions resulting in injury to pedal cyclists in the Edinburgh area. It gives an overview of pedal cyclist (P/C) casualties for the period 2004 to 2010 and then looks in detail at the profile of the casualties and factors relating to the collisions that occurred during this period.

The report provides background information in relation to the Road Safety Plan for Edinburgh to 2020. The road safety plan has identified the need to assess the vulnerability of cyclists on the road network through incident analysis and the requirement to identify patterns of cyclist collisions occurrence and notable cycle groups at risk.

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.

1.2. Data Assessment

The data assessment has been primarily carried out between the years of 2004 and 2010. The Road Safety Plan for Edinburgh utilised a 2004 – 2008 data set to form the basis of the plan. In the intervening period since the plan was developed, the 2009 and 2010 full year incident data set has become available and is included within this assessment to identify continuing or varying trends.

With regard to analysis of cyclist fatalities, due to the relatively low number of fatalities between 2004 and 2010, it was felt prudent to expand this analysis back to 1996 in several areas of the analysis. This allowed for a larger data set in which to carry out the analysis. Each chapter within the report details the year assessment utilised for analysis.

1.3. Report Detail

The following provides details of the report structure though each chapter:

- Chapter 2*: How Many?* – Trends, casualty totals, rate of incidents
- Chapter 3: *Who?* – Age of cyclist casualty, sex of cyclist casualty
- Chapter 4: *When?* – Time of day, day of week, month of year analysis
- Chapter 5: *Where?* – Location of incidents, road class, junction detail
- Chapter 6: *How?* – Weather, manoeuvre analysis, causation analysis
- Chapter 7: Summary and Discussion
- Chapter 8: Conclusion

2. How Many? – Analysis of Cyclist Casualty Totals and Rates

2.1. How Many Casualties?

Between the years of 2004 and 2010 there were 9,326 personal injury road traffic collisions reported to the police in Edinburgh, resulting in 11,091 casualties. Of these casualties, 1307 (12%) involved injury to pedal cyclist.

Table 2.1 shows the comparison between total road casualties and cycle casualties between 2004 and 2010.

Table 2.1 Pedal cyclist casualties by year and severity in Edinburgh 2004 to 2010

Collisions / Casualties	Fatal	Serious	KSI	Slight	Total
All Collisions	55	1148	1203	8123	9326
All Casualties	56	1214	1270	9821	11091
Cycle Casualties	6	199	205	1102	1307
% Cycle of All Collisions	11%	17%	17%	14%	14%
% Cycle of All Casualties	11%	16%	16%	11%	12%

2.2. Annual Trends 2004 to 2010

Table 2.2 shows the number of P/C casualties by year, severity and casualty class in Edinburgh from 2004 to 2010.

Table 2.2 Pedal cyclist casualties by year and severity in Edinburgh 2004 to 2010

Casualty Severity	2004	2005	2006	2007	2008	2009	2010	2004-2010 Total	% Change 04-10
Fatal	2	0	1	0	1	1	1	6	-50%
Serious	20	30	25	32	29	33	30	199	50%
KSI	22	30	26	32	30	34	31	205	41%
Slight	144	140	172	141	154	173	178	1102	24%
All	166	170	198	173	184	207	209	1307	26%

P/C casualties have fluctuated throughout this period with a steady increase since 2007. Overall, P/C casualties have increased by 26% between 2004 and 2010.

There has been relatively little change to the rate of cyclist fatalities since 2004, however, this should be expected given the significantly low number of occurrences.

Serious cyclist casualties have increased by 50% during the 2004 – 2010 period whilst slight cyclist casualties have increased by 24%.

Table 2.2 shows the number of P/C casualties by 5 year periods. These figures show a comparison of the 2004 to 2008 period against the 2006 to 2010 period. The table shows that there is no change in fatality rates between these years of assessment. The serious and slight casualty rates have increased by 9.6% and 8.9% respectively over these 5 year periods.

Table 2.2 Pedal cyclist casualties by year and severity in Edinburgh 2004 to 2010

Casualty Severity	2004-2008 Total	2006 - 2010 Total	% change	2004-2008 Ave	2006 - 2010 Ave	% change
Fatal	4	4	0.0%	0.8	0.8	0.0%
Serious	136	149	9.6%	27.2	29.8	9.6%
KSI	140	153	9.3%	28	30.6	9.3%
Slight	751	818	8.9%	150.2	163.6	8.9%
All	891	971	9.0%	178.2	194.2	9.0%

Figures 2.1 and 2.2 show the yearly P/C casualties by severity from 2004 to 2010. The trend line shows the general increase in total cycle casualties during this period. The graph also shows that the total number of casualties is primarily made up of slight casualties with 85% of all cycle casualties recorded.

The graph shows that there has been little change in KSI cycle casualties since 2005.

Figure 2.1 Pedal cyclist casualties by year 2004-2010

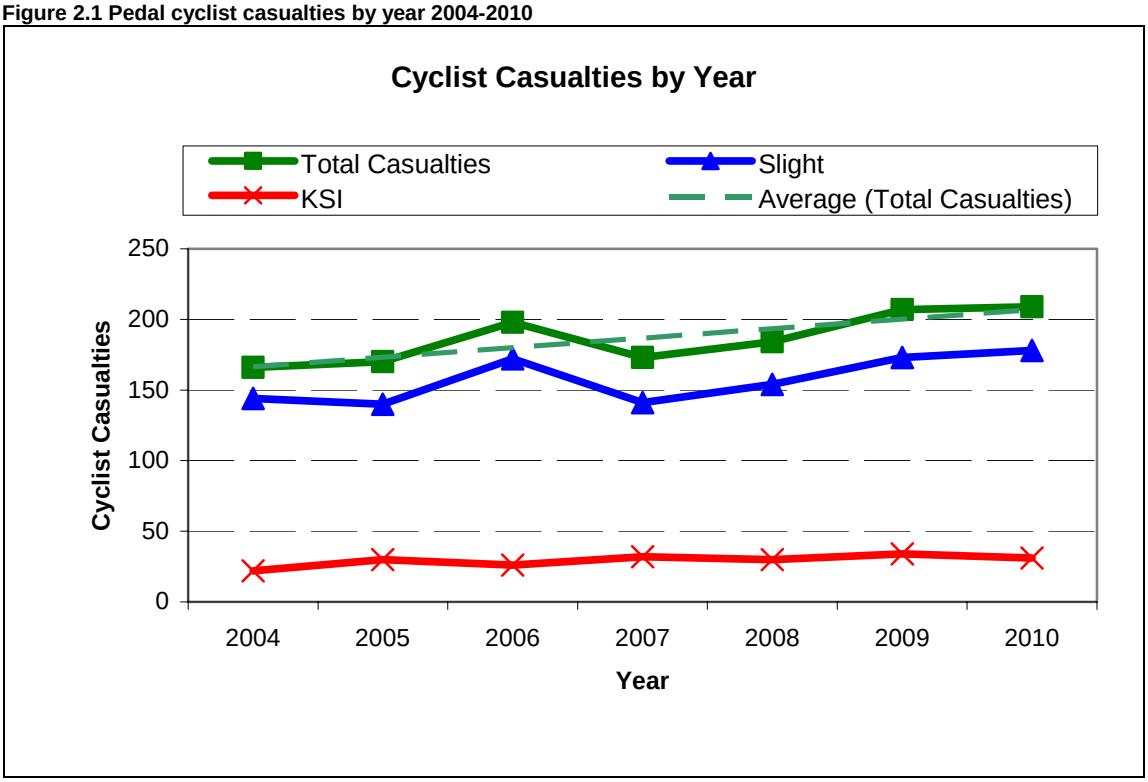
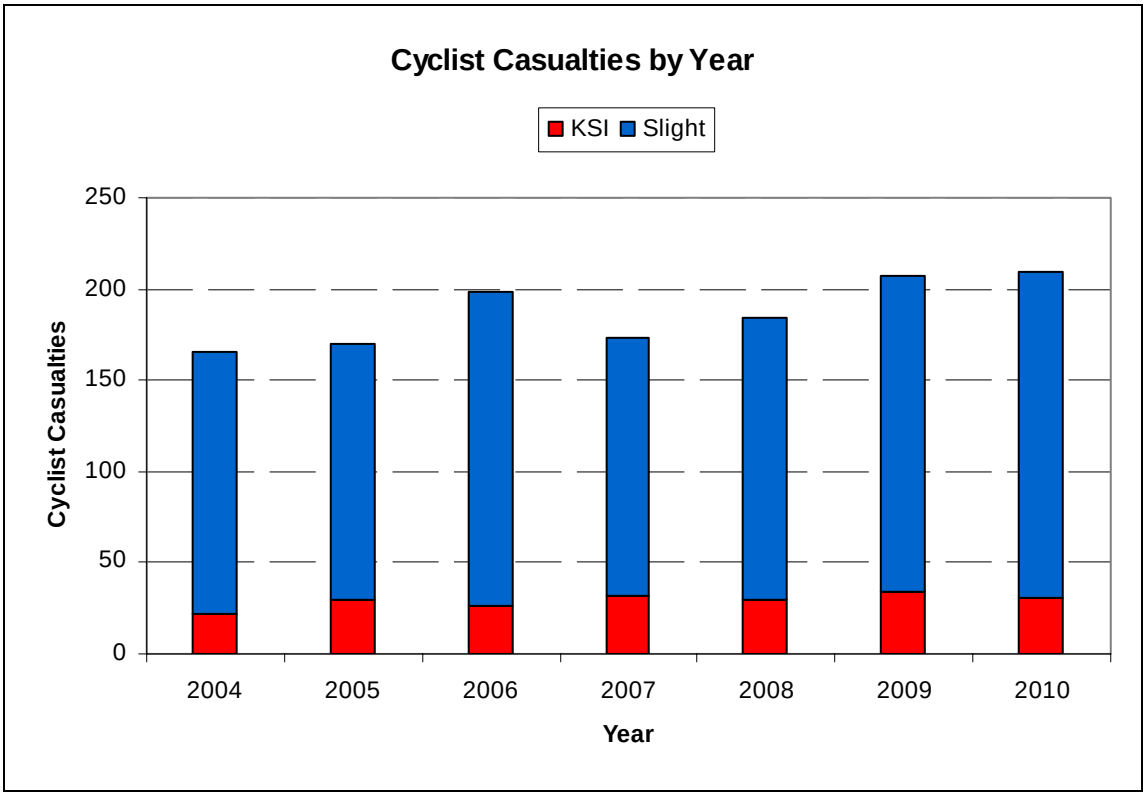


Figure 2.2 Pedal cyclist casualties by year 2004 -2010



2.3. Analysis of Cyclist Fatalities

The figures for fatal cyclist casualties have shown very low numbers since 2004 with only seven fatalities recorded in total since this date. Due to this relatively low number, the analysis of cyclist fatalities was extended back to 1996 to broaden the data set to identify any trends in incident occurrence resulting in cyclist fatality.

Figure 2.3 shows the yearly P/C fatalities from 1996 to 2010.

The figure shows that the trend for low cyclist fatalities continues back to 1996. There has only been one year when the total number of cyclist fatalities has exceeded one, that being two fatalities in 2004.

The average fatality rate during the 1996-2010 period is 0.73 fatalities per annum. The graph shows that there has been one fatality every year since 2008.

Figure 2.3 Pedal cyclist fatalities by year 1996 -2010

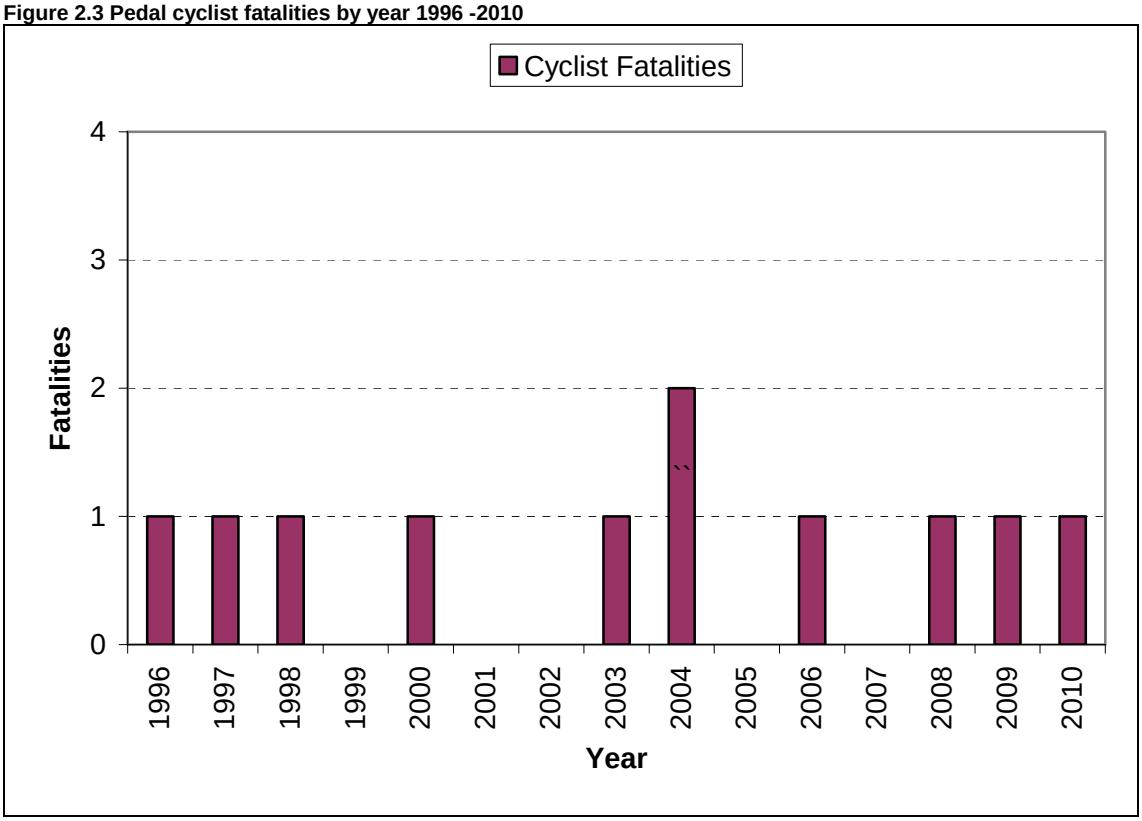


Table 2.3 shows further general statistics for cyclist fatalities during the period 1996-2010.

Table 2.3 General Fatality Statistics 1996 -2010

	Who?		When?				Where?			
Year	Age	Sex	Day	Date	Month	Time	Postcode	Road Class	Junction Detail	Junction Control
1996	40	Male	Thursday	5	December	6	EH30	A	Not at or within 20 metres of junction	unset
1997	64	Male	Thursday	3	April	15	EH12	A	Not at or within 20 metres of junction	unset
1998	21	Female	Thursday	5	November	14	EH9	A	'T' or staggered junction	Give way sign or markings
2000	9	Male	Wednesday	15	November	9	EH15	C	Not at or within 20 metres of junction	unset
2003	43	Female	Monday	26	May	8	EH15	B	30	Roundabout
2004	25	Male	Thursday	5	February	15	-	Unclassified	30	'T' or staggered junction
2004	28	Male	Tuesday	7	September	20	EH8	A	30	'T' or staggered junction
2006	14	Male	Wednesday	30	August	7	EH4	A	30	Not at or within 20 metres of junction
2008	35	Male	Tuesday	29	April	9	EH8	A	30	Crossroads
2009	46	Male	Wednesday	11	February	10	EH7	Unclassified	'T' or staggered junction	Give way sign or markings
2010	38	Male	Saturday	12	June	14	EH6	Unclassified	60	Not at or within 20 metres of junction

Table 2.3 provides detail of the eleven cyclist fatalities that have occurred in Edinburgh since 1996. Due to the relatively low numbers of occurrences, the table does not generally show any trends for many of the statistical data sets shown.

The table does show that nine of the eleven fatalities were male. This generally follows the trend of all casualties as detailed in Section 3.1.

The table also shows that six of the eleven fatalities occurred on A-class roads.

It is clear from the table that the limited data set does not lend itself to provide any clear trends in cyclist casualties. The subsequent chapters of this report provide a more robust assessment of cyclist casualties in Edinburgh by considering all casualty severity cases in Edinburgh between 2004 and 2010. This is detailed in Chapter 3 (age and gender), Chapter 4 (time of day, day of week etc.) and Chapter 5 (location of incidents, road classification etc.).

Chapter 6 provides more detail on the analysis of cycle fatalities and serious casualties with respect to vehicle and cycle manoeuvres, conflicts and contributory factors

2.4. Pedal Cycle Usage in Edinburgh

In order to gain a clearer picture of the extent of the P/C collision levels in Edinburgh, it is important to look at casualty numbers in relation to pedal cycle usage. There is limited cycle usage data currently available in Edinburgh. SPOKES carry out a by-annual cycle count at two locations within the city. However, there is a city centre cordon cycle survey undertaken each year (CEPATS) covering a cordon through the city centre at 37 sites as detailed in Table 2.3.

Table 2.3 CEPATS Cycle Survey Sites

No.	Site Name	Site Location	On or Off road
01	Abbeyhill	Between Railway Bridge & Abbeyhill Crescent	On-road
02	Arboretum Place	Just North of entrance to Botanical Gardens	On-road
03	Belford Road	Just South of entrance to Gallery of Modern Art	On-road
04	Broughton Road	Between Redbraes Place & Gibson Street	On-road
05	Brunswick Road	Between Leith Walk & West Montgomery Place	On-road
06	Brunswick Street	Between Montgomery Street & Hillside Crescent	On-road
07	Bruntsfield Place	Between Leamington Terrace & Whitehouse Loan	On-road
08	Calton Terrace Brae	Just East of Carlton Terrace	On-road
09	Carrington Road	Between Fettes Avenue & Crewe Road South	On-road
10	Clerk Street	Between Bernard Terrace & Montague Street	On-road
11	Comely Bank Road	Between Crewe Road South & Fettes Avenue	On-road
12	Dalry Road	Between Distillery Lane & Dalry Place	On-road
13	Dundee Street	Between Gilmore Park & Viewforth	On-road
14	East Fettes Avenue	Between Inverleith Place and Carrington Road	On-road
15	East Meadows. Town Womens Guild Walk	South of North Meadow Walk.	Off-road
16	Gilmore Place	Between Hailes Street & Home Street	On-road
17	Glengyle Terrace	Pedestrian routes to / from Marchmont	Off-road
18	Hope Park Crescent	Between Buccleuch Street & Melville Drive	On-road
19	Innocent Railway	Just West of steps from St Leonards Bank	Off-road
20	Inverleith Row	Between Eildon Street & entrance to Botanical Gardens	On-road
21	Leith Walk	Between McDonald Road & Albert Street	On-road
22	London Road	Between Windsor Street & Hillside Crescent	On-road
23	Melville Drive	Between Lonsdale Terrace & South Meadow Walk	On-road
24	Middle Meadow Walk/Jawbone Walk/North Meadow Walk/Boy's Brigade Walk	At confluence of paths	Off-road
25	Montgomery Street	Between West Montgomery Place & Brunswick Street	On-road
26	Orchard Brae	Between Orchard Brae Avenue & Queensferry Road	On-road
27	Queensferry Road	Between Orchard Brae & Daniel Stewart's & Melville College	On-road
28	Ravelston Terrace	At Daniel Stewart's & Melville College	On-road
29	Regent Road	Just East of junction with Regent Terrace	On-road
30	St Leonard's Street	Between Parkside Street & Montague Street	On-road
31	St Mark's Place	On recreation ground footbridge	Off-road
32	Warriston Cycleway	North end of bridge over Water of Leith & Warriston Road	Off-road
33	Warriston Road	Just East of Logie Green Road	On-road
34	West Approach Road	Just East of Dundee Street ramp	On-road
35	West Coates	Between Wester Coates Road & Stanhope Street	On-road
36	Wester Coates & Water of Leith Walkway	Just East of bridge to Gallery of Modern Art	Off-road
37	Whitehouse Loan	Between Bruntsfield Place & ped crossing at Leamington walk	On-road

The CEPATS data is collated in the AM peak on one day each year and provides cycle flow data in each direction at these sites. For the purposes of this report, the

CEPATS data set is considered robust enough to provide an indication of the rate of change of pedal cycle usage in Edinburgh over the period 2004 to 2010.

Figure 2.3 shows the CEPATS cycle count totals between 2004 and 2010.

Figure 2.3 Radial pedal cycle movements (08:00-09:00) in Edinburgh, both directions combined 2004-2010

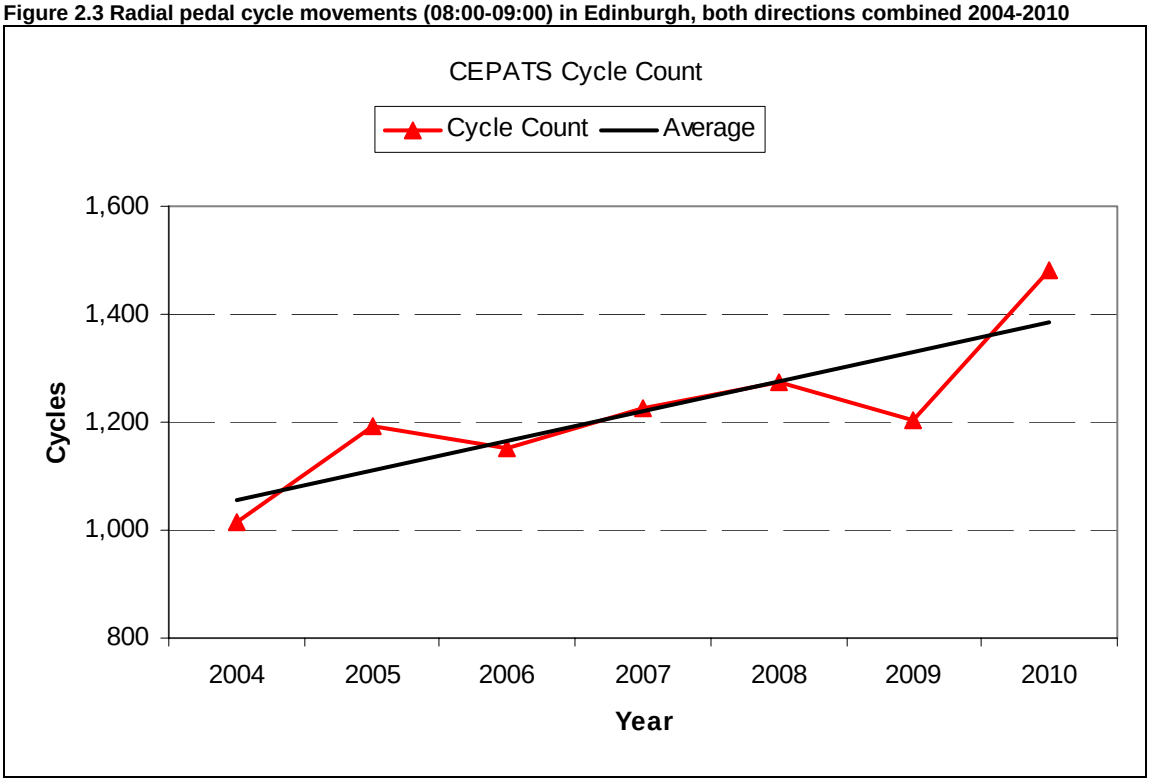


Figure 2.3 shows a steady increase in cycle usage between 2004 and 2010. The 2010 figure of 1482 cycle trips over the CEPATS defined cordon is a 46% increase over the trips totals collated in 2004 (1013 cycle trips).

2.5. Pedal Cycle Accident Rate Analysis

Figure 2.4 shows indices of cycling flow and P/C casualties, including slight and KSI casualties, on the Edinburgh network between 2004 and 2010. The index for each of the data variables has been set to 100 for whatever their values were in the year 2004, so that the year on year changes can be measured on a comparable basis.

Figure 2.4 Indices of cycling flow and cyclist casualties in Edinburgh, 2004-2010 [Year 2004 = 100]

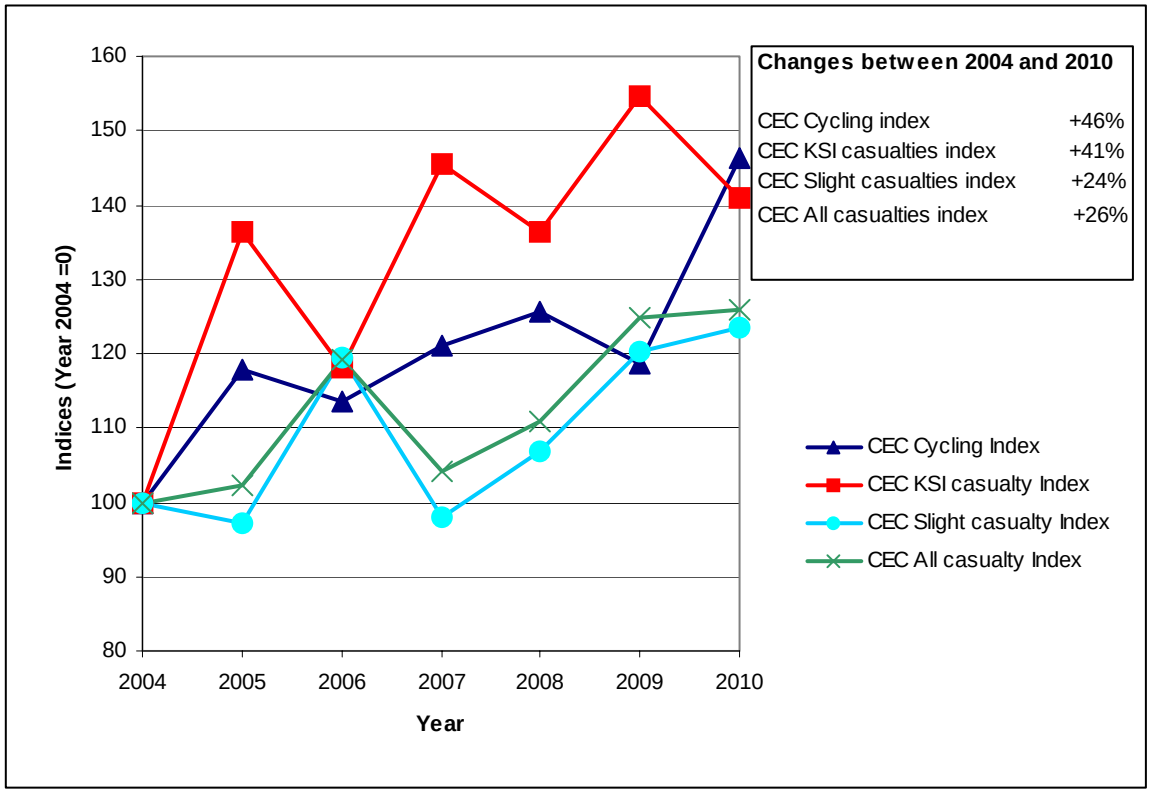


Figure 2.4 shows that the rate of increase in cycle flow has generally been greater than the rate of increase of cyclist casualties. When considering KSI cyclists only, the rate of increase in the KSI's has been higher than the rate of increase in cycle flow. This has been the case from 2004 to 2009. In 2010, the graph shows that this trend changes, with the rate of increase in cycle flow becoming higher than the rate of KSI's.

Table 2.4 shows the percentage change in cycle flow and cyclist casualty from 2004 to 2010.

Table 2.4 Percentage change in cycling flow and cyclist casualties in Edinburgh, 2004-2010

	Percentage change since 2004						
Flow & Casualties	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Cycle Count	-	18%	14%	21%	26%	19%	46%
KSI	-	36%	18%	45%	36%	55%	41%
Slight	-	-3%	19%	-2%	7%	20%	24%
All	-	2%	19%	4%	11%	25%	26%

3. Who? – Analysis of Cyclist Casualty Age and Gender

3.1. Gender Analysis 2004 to 2010

Between 2004 and 2010 there were 1307 personal injury road traffic collisions reported to the police in the Edinburgh area. The majority 1102 (84.3%) of P/C casualties were slightly injured, with almost 200 (15.2%) seriously injured and less than 1% (6 P/C's) killed.

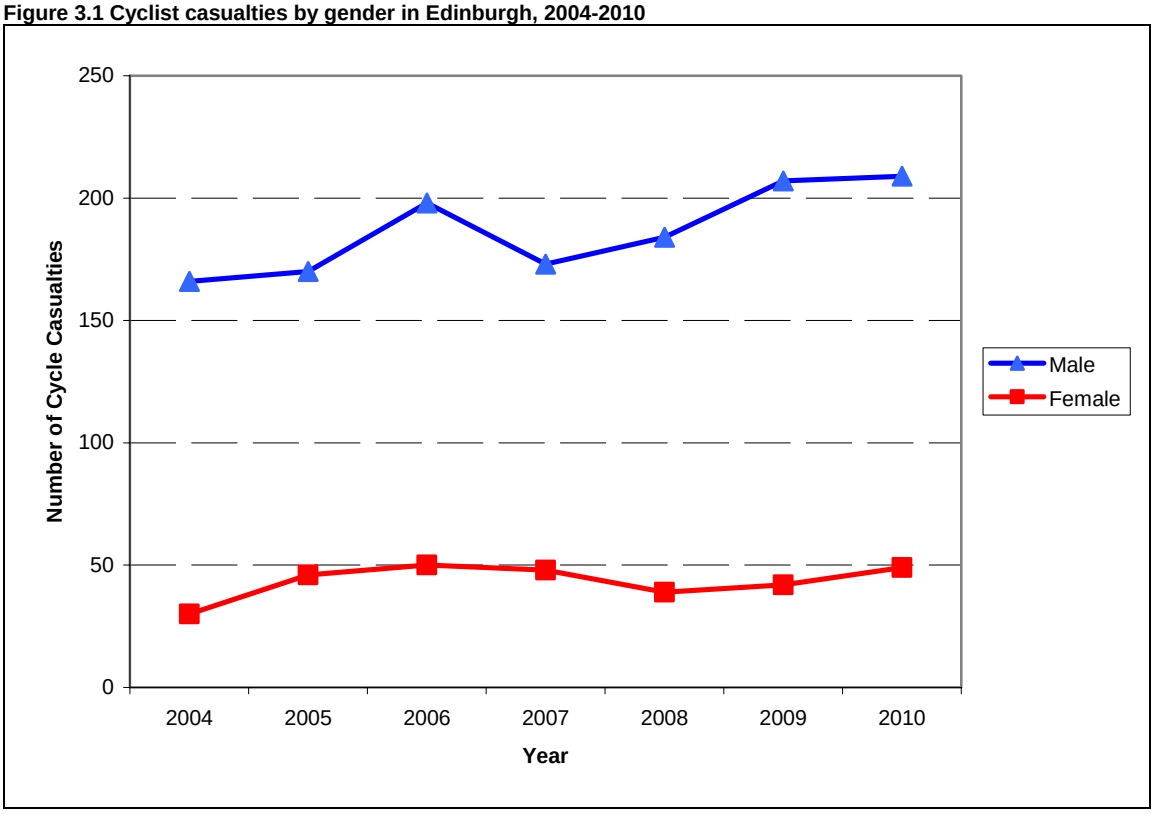
The severity ratio for females (18.8%) is slightly higher than that for males (14.8%) during this period.

Table 3.1 Pedal Cyclist casualties by gender, severity and severity ration in Edinburgh 2004 to 2010

	Severity of Casualty				
	Fatal	**Serious**	**Slight**	**Total**	**Severity Ratio**
Male	6	142	855	1003	14.8%
Female	0	57	247	304	18.8%
Total	**6**	**199**	**1102**	**1307**	**15.7%**

Figure 3.1 shows the P/C casualties by gender in Edinburgh from 2004 to 2010. The figure shows that there is a significantly higher rate of male casualties than female casualties with a total of 1003 (77%) male casualties during this period compared to 304 (23%) female casualties.

Figure 3.1 Cyclist casualties by gender in Edinburgh, 2004-2010



3.2. Age Analysis 2004 to 2010

Table 3.2 shows P/C casualties by age band between 2004 and 2010. The table shows that the percentage of P/C casualties in the over 60's age band has remained relatively consistent at 4-5% of the total over this period. The actual number of casualties has also remained relatively constant.

The percentage of the 30-59's age band has increased slightly during this period from 45% to 52% of the total P/C casualties. The actual casualty numbers has increased by 44% from 75 to 108 during this period.

The percentage of the 16-19's age band has decreased slightly from 39% to 36% of the total P/C casualties. The actual casualty numbers has increased by 17% from 64 to 75 during this period.

The percentage of the under 16's age band has decreased slightly from 11% to 8% of the total P/C casualties. The actual casualty numbers has decreased slightly by 11% from 19 to 17 casualties during this period. This decrease in actual numbers breaks the trend of all other age band during this period of analysis.

Table 3.3 Pedal Cyclist casualties by year and age (banded) in Edinburgh 2004 to 2010

	Casualty Age Band					% aged	% aged	% aged	% aged
Year	<16	16-29	30-59	60+	Total	<16	16-29	30-59	60+
2004	19	64	75	8	166	11%	39%	45%	5%
2005	12	63	91	4	170	7%	37%	54%	2%
2006	31	52	106	9	198	16%	26%	54%	5%
2007	9	63	95	6	173	5%	36%	55%	3%
2008	23	66	89	6	184	13%	36%	48%	3%
2009	23	65	110	9	207	11%	31%	53%	4%
2010	17	75	108	9	209	8%	36%	52%	4%
% Change '04 to '10	-11%	17%	44%	13%	-	-	-	-	-

Table 3.4 and Figure 3.2 show the number of P/C casualties by five-year age bands, gender and severity in Edinburgh between 2004 and 2010.

75% of P/C casualties were aged between 20 and 49 years, with 57% between the ages of 20 and 39 years.

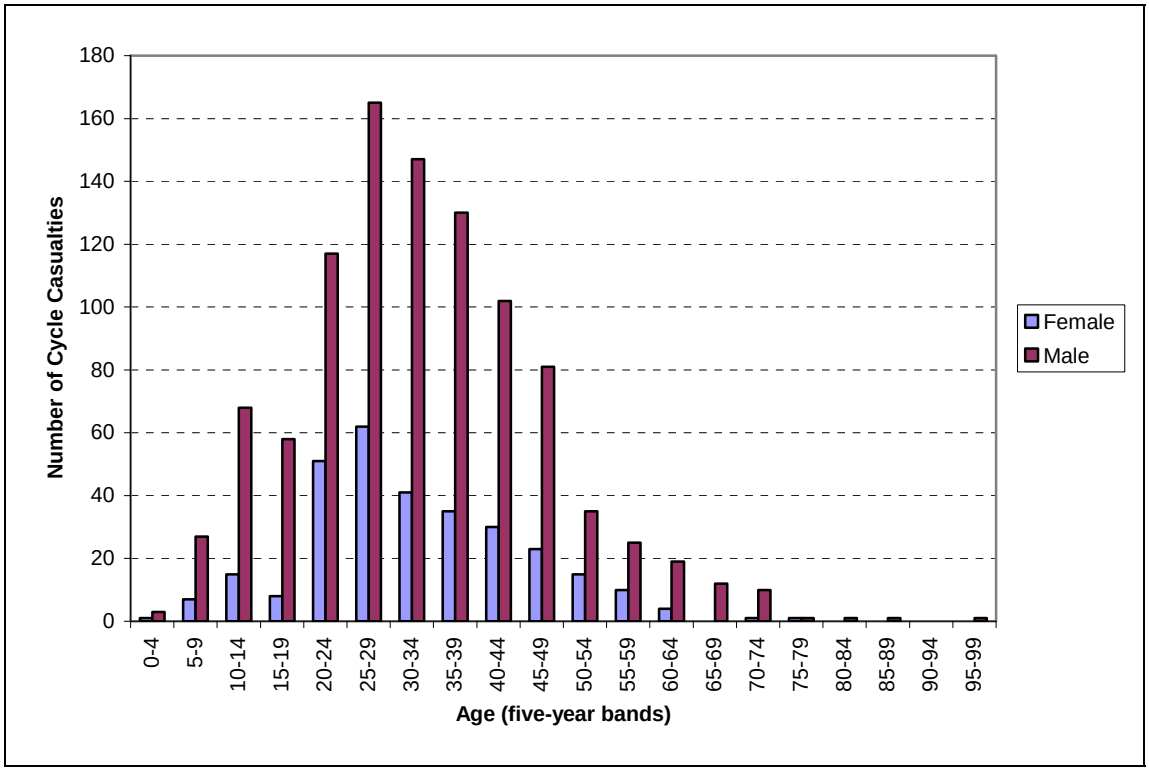
The highest numbers for both male and female casualties occurred in the 25-29 year age band, with together accounted for 17.5% of the total P/C casualties.

The highest severity ratio (30%) was found in the age band 60-64. 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 3.4 Pedal Cyclist casualties by age-band, gender, severity and severity ratio in Edinburgh 2004-2010

	Casualty Gender		Severity of Casualty				% of	Severity
Age	Female	Male	Fatal	Serious	Slight	Total	Age	Ratio
0-4	1	3	0	0	4	4	0.3%	0%
5-9	7	27	0	7	27	34	2.6%	21%
10-14	15	68	1	9	73	83	6.4%	12%
15-19	8	58	0	9	57	66	5.0%	14%
20-24	51	117	0	19	149	168	12.9%	11%
25-29	62	165	2	29	196	227	17.4%	14%
30-34	41	147	0	30	158	188	14.4%	16%
35-39	35	130	2	22	141	165	12.6%	15%
40-44	30	102	0	23	109	132	10.1%	17%
45-49	23	81	1	22	81	104	8.0%	22%
50-54	15	35	0	11	39	50	3.8%	22%
55-59	10	25	0	8	27	35	2.7%	23%
60-64	4	19	0	7	16	23	1.8%	30%
65-69	0	12	0	2	10	12	0.9%	17%
70-74	1	10	0	1	10	11	0.8%	9%
75-79	1	1	0	0	2	2	0.2%	0.0%
80-84	0	1	0	0	1	1	0.1%	0.0%
85-89	0	1	0	0	1	1	0.1%	0.0%
90-94	0	0	0	0	0	0	0.0%	0.0%
95-99	0	1	0	0	1	1	0.1%	0.0%
Total	**304**	**1003**	**6**	**199**	**1102**	**1307**	**100%**	**15.7%**

Figure 3.2 Pedal Cyclist casualties by age-band and gender in Edinburgh 2004-2010

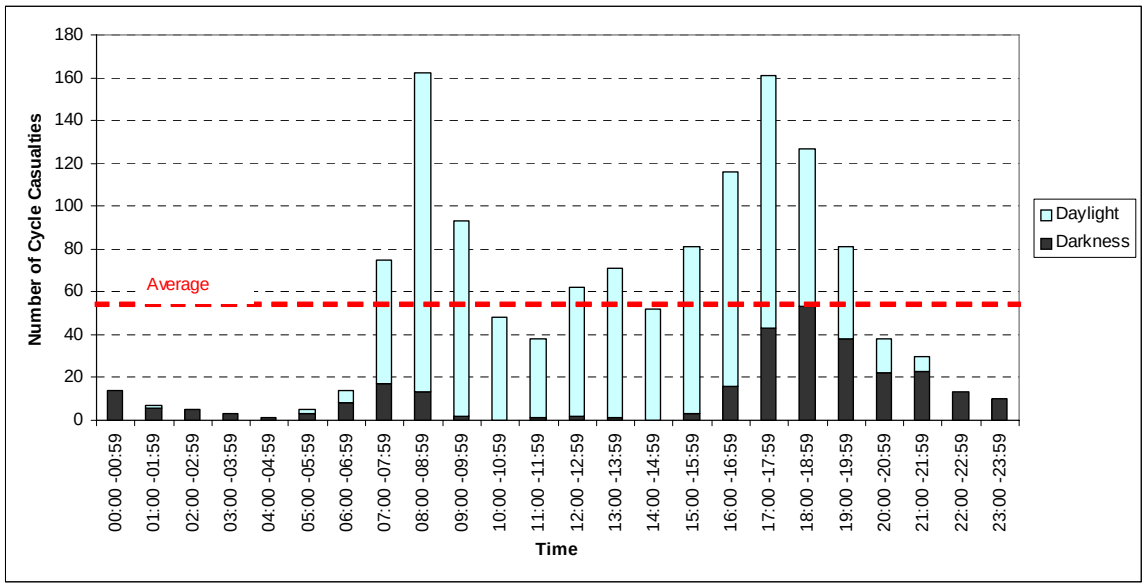


4. When? – Analysis of When Cyclist Collisions Occur

4.1. Time of Day Analysis 2004 to 2010

Figure 4.1 shows the total number of P/C casualties by time of day between 2004 and 2010. The figure also indicates the proportions occurring in daylight or during the hours of darkness.

Figure 4.1 Pedal Cycle casualties by time of day and light conditions in Edinburgh 2004-2010



Over three quarters (83%) 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. A quarter of all P/C casualties were injured between 7am and 10am, with the highest single hour between 8am and 9am, 162 casualties (12.4%).

34% of all P/C casualties were injured between 4pm and 7pm, which is higher than for the same 3 hour time duration in the AM peak. The number of P/C casualties in the PM peak hour, 4pm-5pm, was almost identical to that of the AM peak hour (PM Peak hour: 162 casualties, 12.3%).

The low period for P/C casualties was between midnight and 6am which accounted for just 2.7% of the total.

4.2. Light Conditions Analysis 2004 to 2010

Table 4.1 shows the P/C casualties by light conditions between 2004 and 2010. From the table, 1010 (77%) of P/C casualties were injured during daylight hours, whilst 297 (23%) were injured during darkness hours.

Of the 297 P/C casualties that occurred during darkness hours, 254 (85%) occurred with street lights present.

Table 4.1 Pedal Cycle casualties by light conditions in Edinburgh 2004-2010

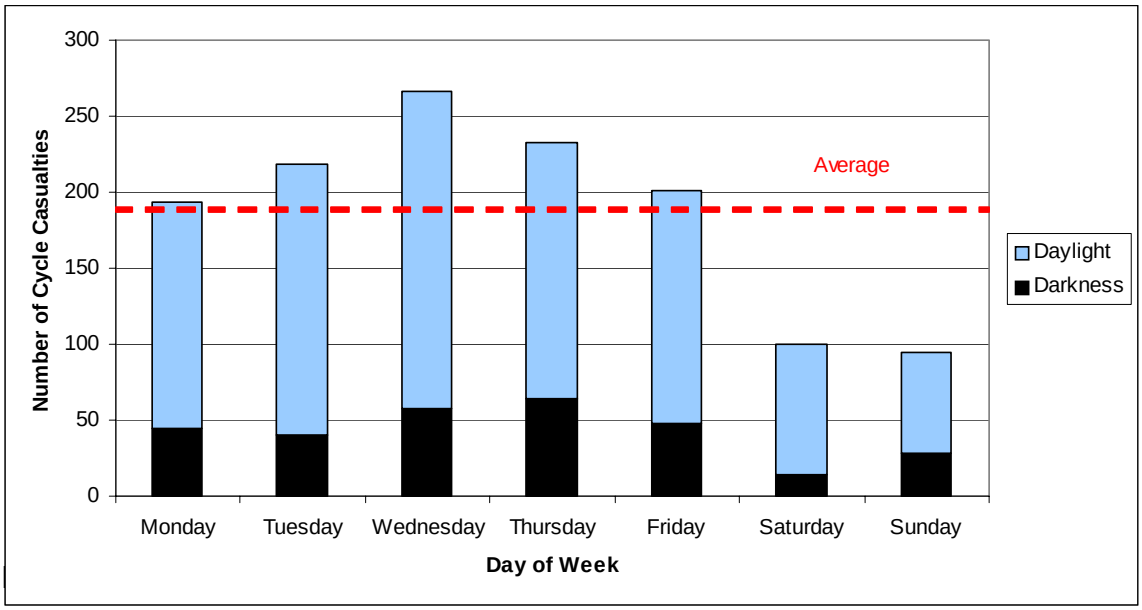
	Darkness				Daylight				
Time	**No Street Lighting**	**Street Lights present & lit**	**Street Lights present & unlit**	**Street lighting unknown**	**No Street Lighting**	**Street Lights present & lit**	**Street lighting unknown**	**Total**	**%**
00:00 -00:59	2	10	2					14	1%
01:00 -01:59		6				1		7	1%
02:00 -02:59		5						5	0%
03:00 -03:59		3						3	0%
04:00 -04:59		1						1	0%
05:00 -05:59		3				2		5	0%
06:00 -06:59		7	1		3	3		14	1%
07:00 -07:59		14	3		8	47	3	75	6%
08:00 -08:59		10	3		20	122	7	162	12%
09:00 -09:59			2		11	79	1	93	7%
10:00 -10:59					6	40	2	48	4%
11:00 -11:59			1		7	30		38	3%
12:00 -12:59			2		3	55	2	62	5%
13:00 -13:59			1		5	65		71	5%
14:00 -14:59					9	43		52	4%
15:00 -15:59		2	1		5	73		81	6%
16:00 -16:59	1	12	3		9	90	1	116	9%
17:00 -17:59	1	37	5		10	103	5	161	12%
18:00 -18:59		49	2	2	7	65	2	127	10%
19:00 -19:59	2	34		2	3	39	1	81	6%
20:00 -20:59	2	19	1		1	14	1	38	3%
21:00 -21:59	1	20	1	1	1	5	1	30	2%
22:00 -22:59		12	1					13	1%
23:00 -23:59		10						10	1%
Total	**9**	**254**	**29**	**5**	**108**	**876**	**26**	**1307**	100%

4.3. Day of Week Analysis 2004 to 2010

Figure 4.2 shows the P/C casualties in Edinburgh by day of the week and light conditions between 2004 and 2010.

From the analysis, 85% of P/C casualties were injured on a weekday, an average of 17% per weekday, with 8% on a Saturday and 7% on a Sunday. The highest casualty day of the week is a Wednesday with 20% of all P/C casualties occurring on that day. The highest proportion of cyclists injured in the dark occurred on a Sunday (42%).

Figure 4.2 Pedal Cycle casualties by day and light conditions in Edinburgh 2004-2010



4.4.

Figure 4.3 shows the P/C casualties in Edinburgh by month of the year and light conditions between 2004 and 2010.

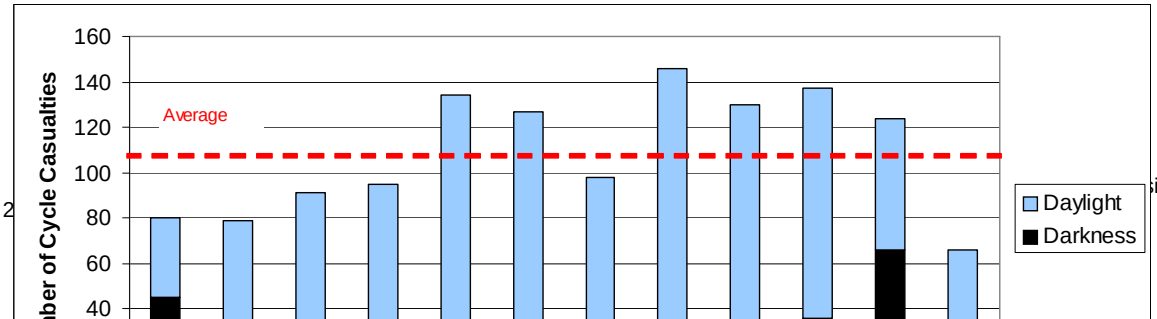
Almost 60% of P/C casualties were injured in the 6 month period May – October, with numbers peaking in August at 146 (11%). Numbers fell to their lowest in the winter months, particularly December at 66 (5%).

Over 50% of P/C casualties in November, December and January were injured in the dark.

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

The lower total of casualties in July compared to the rest of the summer months may be a blip or could be related to lower cycling levels as commuters are on holiday.

Figure 4.3 Pedal cycle casualties by month and light conditions in Edinburgh 2004-2010



5. Where? – Analysis of Cyclist Casualty Location

5.1. Postcode Analysis 2004 to 2010

Table 5.1 shows the number of P/C casualties by postcode between 2004 and 2010. The table shows that the postcode areas of EH8, EH3, EH4, EH11, ED12, EH1,EH7, and EH9 all have similar levels of P/C incidents and account for 64% of all P/C casualties in Edinburgh over the 2004 to 2010 period.

The table shows that there is no particular hotspot of cycle casualties in Edinburgh with respect to postcode, with many of the high density areas showing similar instances of P/C casualties.

Table 5.1 Pedal Cycle casualties by postcode in Edinburgh 2004-2010

Postcode	Detail	Cycle Incidents	%
EH8	Inner city southside,Newington, Holyrood Park, Northfield, Mountcastle	121	9%
EH3	Newtown of Queen St to Stockbridge, West End, Tollcross, Fountainbridge	119	9%
EH4	Central area to Dean Village, Comely Bank, A90 to Barnton and Cramond	105	8%
EH11	A71 Haymarket, Georgie, Stenhouse to Sighthill	101	8%
EH12	A8 Haymarket through Murrayfield and Corstorpnine to Gyle	100	8%
EH1	Old Town, Leith St, Broughton Street	98	7%
EH7	Inner City,Central Edinburgh to Leith, Restalrig, Craigentinny	96	7%
EH9	Inner City, Marchmont, Grange	96	7%
EH6	Leith, Newhaven	67	5%
EH10	A702 Bruntsfied, Morningside, Fairmilehead	65	5%
EH16	Liberton, Cameron Toll, Craigmillar, Niddrie	65	5%
EH14	Slateford, Longstone, Wester Hailes, Juniper green, Currie, Blerno	63	5%
EH15	Portobello / Duddingston	58	4%
EH2	New Town / Princes Street	56	4%
EH5	Granton / Ferry Road	28	2%
EH17	Gilmerton / Moredun	23	2%
EH13	Colinton / Oxgangs	19	1%
EH30	South Queensferry	14	1%
EH28	Newbridge, Ratho	7	1%
EH29	Kirkliston	5	0%
EH21	Musselburgh	1	0%
Total		**1307**	**100%**

5.2. Road Classification Analysis 2004 to 2010

Table 5.2 shows P/C casualties by road classification and severity. 38% were injured on A-class roads, with 15% and 6% injured on C-class and B-class roads respectively. The number of P/C casualties occurring on unclassified roads accounted for 41% of the total casualties.

Half of the six P/C fatalities recorded were on A-class roads with the remaining 50% on unclassified roads. The highest severity ratio (19%) was recorded for casualties on C-class roads.

Table 5.2 Pedal Cycle casualties by postcode in Edinburgh 2004-2010

	Severity of casualty					
Road Class	**Fatal**	**Serious**	**Slight**	**Total**	**% of total**	**Severity Ratio**
A	3	77	418	498	38%	16%
B		11	67	78	6%	14%
C		36	157	193	15%	19%
Unclassified	3	78	457	538	41%	15%
Total	6	202	1099	1307	100%	16%

5.3. Junction Detail Analysis 2004 to 2010

Table 5.3 shows the P/C casualties by junction detail between 2004 and 2010. 74% of P/C casualties were injured at or within 20m of a junction, highlighting the particular vulnerability of pedal cyclists at junctions.

Of the P/C injured at a junction, 483 (37% of total) occurred a t a ‘T’ or staggered junction, 190 (17% of total) occurred at a crossroads, and 119 (9% of total) occurred at a roundabout.

Table 5.3 Pedal Cycle casualties by junction detail in Edinburgh 2004-2010

	Severity of casualty					
Junction Detail	**Fatal**	**Serious**	**Slight**	**Total**	**% of total**	**Severity Ratio**
'T' or staggered junction	3	65	415	483	37%	14%
Not at or within 20 metres of junction	2	65	276	343	26%	20%
Crossroads	1	34	190	225	17%	16%
Roundabout	0	14	105	119	9%	12%
Other junction	0	13	45	58	4%	22%
Mini-roundabout	0	2	22	24	2%	8%
Multiple junction	0	2	22	24	2%	8%
Using private drive or entrance	0	5	18	23	2%	22%
Slip road	0	2	6	8	1%	25%
Total	6	202	1099	1307	100%	16%

Table 5.4 shows the P/C casualties by junction control between 2004 and 2010. In terms of the number of P/C injuries at a junction, 700 (73%) were injured where the control was ‘Give Way’ and 236 (25%) were at a junction controlled by automatic traffic signals.

Table 5.4 Pedal Cycle casualties by junction control in Edinburgh 2004-2010

Junction Detail	Give way sign or markings	unset	Traffic Signal	Uncontrolled	Authorised Person	Stop sign	Total
'T' or staggered junction	390		79	6	3	5	483
Not at or within 20 metres of junction		343					343
Crossroads	102		115	2	4	2	225
Roundabout	111		8				119
Other junction	43		13	1		1	58
Mini-roundabout	24						24
Multiple junction	4		18		2		24
Using private drive or entrance	18	1	3	1			23
Slip road	8						8
Total	**700**	**344**	**236**	**10**	**9**	**8**	**1307**

5.4. Incident Location Analysis

Figure 5.1 and 5.2 show the mapped location for each incident resulting in P/C casualty with Edinburgh. These figures have been extracted from the GIS system ‘Smallworld’ which is used by The City of Edinburgh Council Road Safety Team to store and display all incident records within the city boundary.

Table 5.1 Location of Serious Cycle Collisions 2004 to 2010

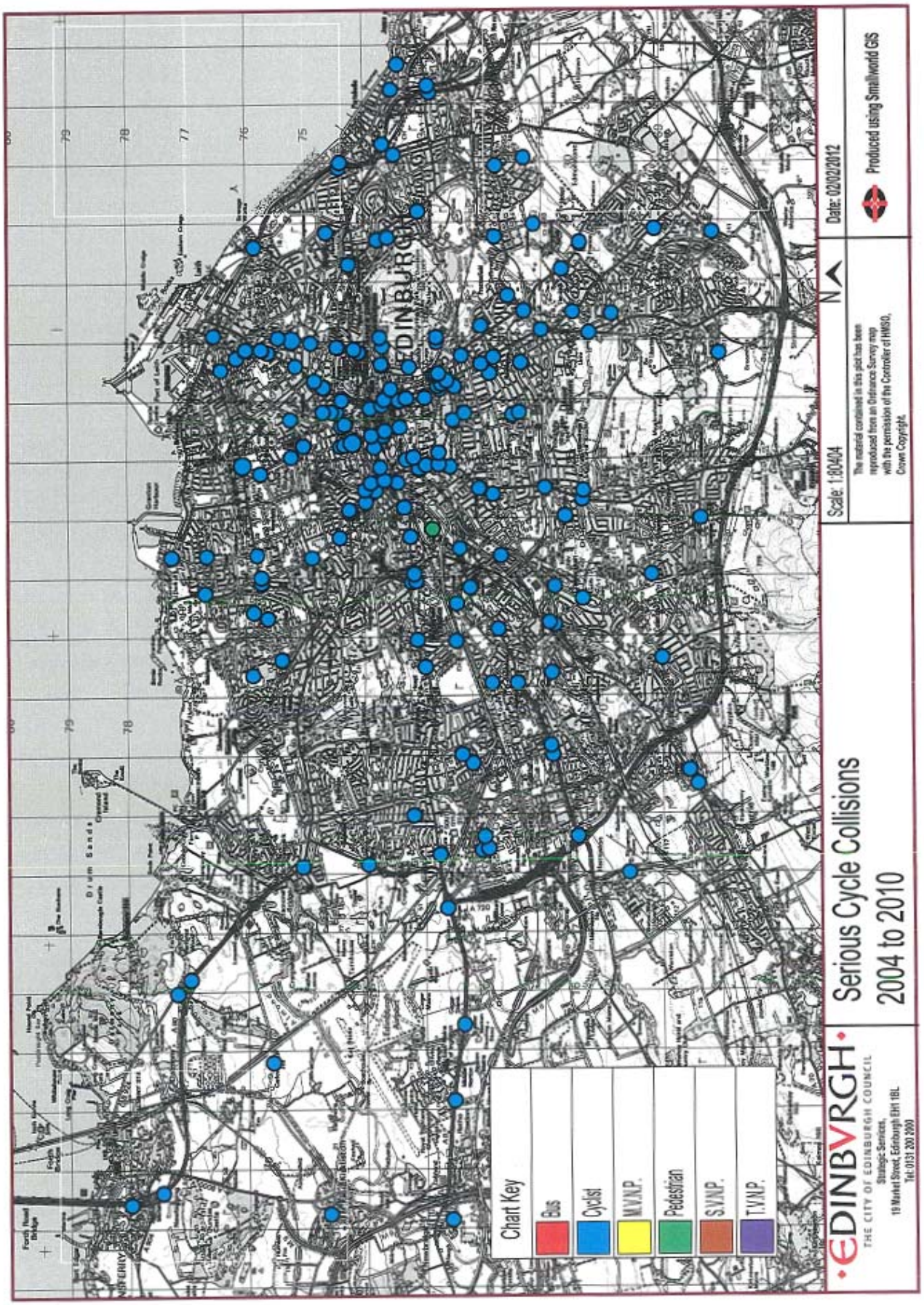


Table 5.1 Location of Fatal Cycle Collisions 1996 to 2010

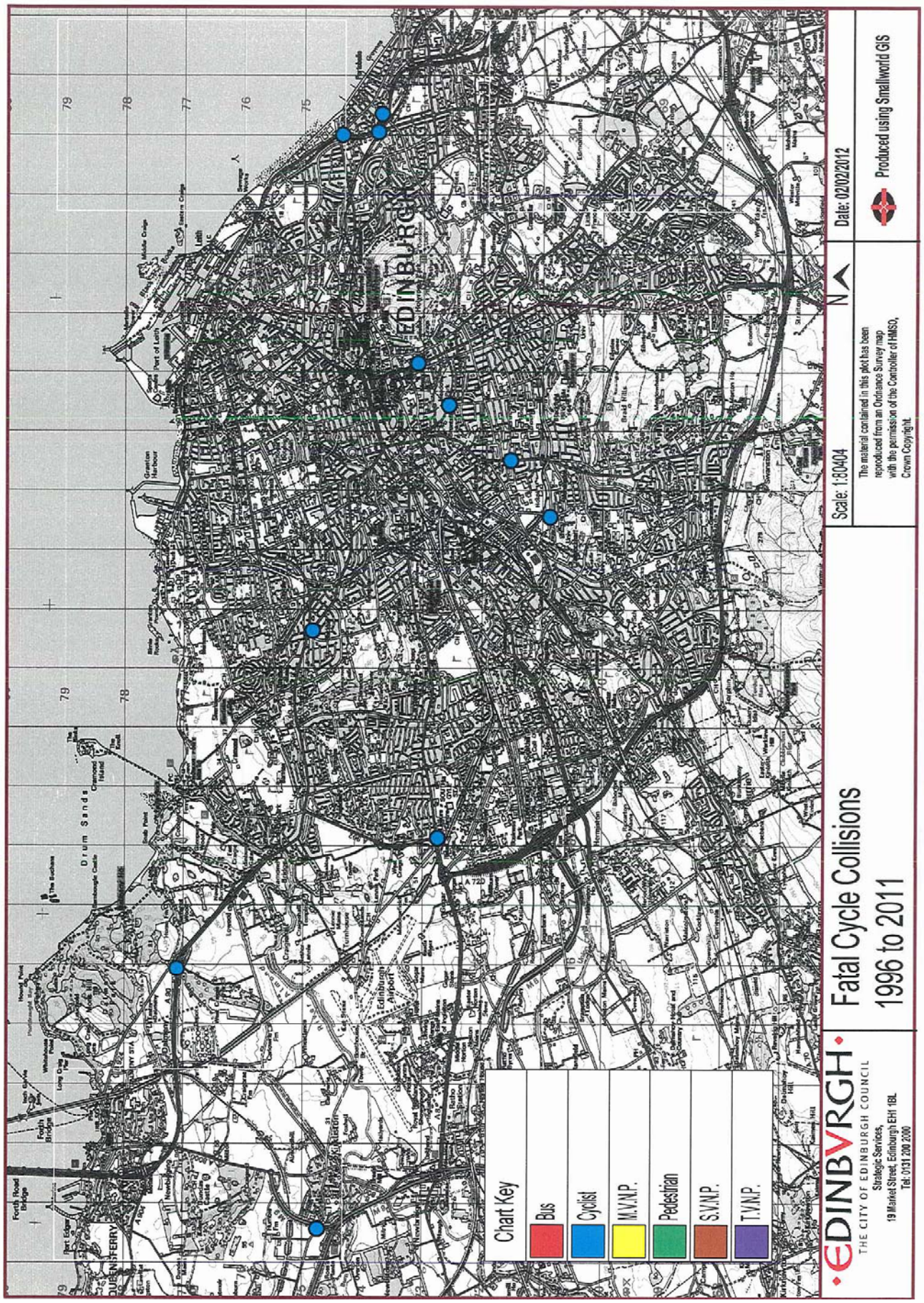


Chart Key
Bus
Cyclist
M.V.N.P.
Pedestrian
S.V.N.P.
T.V.N.P.
EDINBVRGH
THE CITY OF EDINBURGH COUNCIL
Strategic Services,
19 Market Street, Edinburgh EH1 1BL
Tel: 0131 200 2000
Fatal Cycle Collisions
1996 to 2011
Scale: 1:80404
N
The material contained in this plot has been reproduced from an Ordnance Survey map with the permission of the Controller of HMSO, Crown Copyright.
Date: 02/02/2012
Produced using Smallworld GIS

Figure 5.2 shows the locations of the eleven P/C fatalities that have occurred between 1996 and 2010. Due to the low numbers involved, there are no real trends or clusters of incidents which can be drawn from the figure.

Figure 5.1 shows the locations of the incidents which have resulted in serious injury to P/C's. The figure does show a general migration of incidents towards the main A-class roads and distributors. Noticeable corridors of incidents include:

- A700/A702 Morningside Road
- A7/A701 South Bridge/Clerk St/Minto St
- A90 Queensferry Road
- A900 Leith Walk
- Easter Road

6. How? – Analysis of Causations of Cyclist Collisions

6.1. Analysis of Weather Factors 2004 to 2010

Table 6.1 shows the P/C casualties by weather conditions and severity between 2004 and 2010. The results show that the vast majority of incidents (81%) occur when the weather conditions are fine, 13% when the weather conditions are wet, and 6% undefined.

Table 6.1 Pedal Cycle casualties by weather conditions and severity in Edinburgh 2004-2010

	Severity				
Weather	**Fatal**	**Serious**	**Slight**	**Total**	**%**
Fine (without high winds)	5	161	874	1040	**80%**
Fine with high winds		2	15	17	**1.3%**
Fog (or mist if hazard)		1	3	4	**0.3%**
Raining (without high winds)	1	19	127	147	**11.2%**
Raining with high winds		2	16	18	**1.4%**
Snowing (without high winds)			2	2	**0.2%**
Other		6	17	23	**1.8%**
Unknown		11	45	56	**4.3%**
Total	6	202	1099	1307	100%

6.2. Analysis of Cycle Manoeuvres 2004 to 2010

Table 6.2 shows P/C casualties by their manoeuvre and severity. 77% of cyclists were injured while ‘going ahead’ i.e. just riding along the road. The next most common manoeuvre, at only 3.8% of the total, involved the pedal cyclist turning right. The only other manoeuvres with a percentage of the total greater than 2% were: ‘waiting to go ahead but held up’ (2.8%), ‘Starting’ (2.6%), ‘Stopping’ (2.2%), and ‘Turing Left’ (2.2%).

Table 6.2 Pedal Cyclist casualties by cyclist manoeuvre, severity and severity ratio in Edinburgh 2004 - 2010

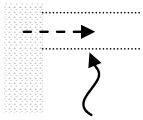
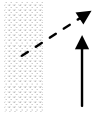
Cycle Manoevre	Fatal	Serious	Slight	Total	% of Total
Reversing		1	4	5	0.4%
Parked	1	1	19	21	1.6%
Waiting to go ahead but held up		4	33	37	2.8%
Stopping		4	25	29	2.2%
Starting		7	27	34	2.6%
U turn			3	3	0.2%
Turning left		4	25	29	2.2%
Wating to turn left			2	2	0.2%
Turning right		5	45	50	3.8%
Waiting to turn right		3	7	10	0.8%
Changing lane to left		1	3	4	0.3%
Changing lane to right		2	8	10	0.8%
Overtaking moving vehice on its offside			11	11	0.8%
Overtaking stationary vehice on its offside		3	16	19	1.5%
Overtaking on nearside		4	6	10	0.8%
Going ahead left hand bend		1	9	10	0.8%
Going ahead right hand bend		3	8	11	0.8%
Going ahead other	5	156	851	1012	77.4%
Total	**6**	**199**	**1102**	**1307**	**100.0%**

6.3. Analysis of Conflicts in Pedal Cycle Collisions

The following tables show listings of the main types of conflicts that occurred in collisions which resulted in fatal or serious injury to a pedal cyclist. The tables include a simple sketch representation of the conflicts between the pedal cyclist (shown as a broken line) and the other vehicles 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 6.3 shows the ranked analysis of the conflicts which resulted in fatal injury to the P/C between 1996 and 2010

Table 6.3 Ranked analysis of the conflicts between vehicles in collisions resulting in a pedal cyclist being fatally injured in Edinburgh 1996-2010

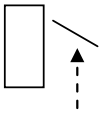
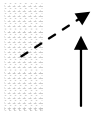
		Conflict Between Pedal Cycle and:												
Conflict	**Description**	Pedal Cycle	Powered 2 wheeler	Car	Taxi	Goods under 3.5t	Goods 3.5t to 7.5t	Goods over 7.5t	Bus or Coach	Other Vehicle	No Other Vehicle	Multiple Vehicle	**Total**	**%**
	other vehicle turns right across path of P/C			**1**		**1**			**1**				3	27%
	Other vehicle turns left across path of P/C							**1**		**1**			2	18%
	Other vehicle runs into rear of P/C			**1**				**1**					2	18%
	P/C loss of control. Head on collision between P/C and other vehicle			**1**									1	9%
	Other vehicle loss of control. Head on collision between P/C and other vehicle			**1**									1	9%
	P/C rides across road at ped crossing into path of swerving other vehicle			**1**									1	9%
	P/C rides off footway into path of other vehicle			**1**									1	9%
	Total	0	0	6	0	1	0	2	1	1	0	0	11	

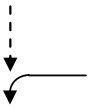
The table shows that there is a spread of conflict types across the eleven fatalities which occurred during this period. The most common conflict type causing three fatalities was where the other vehicle turned right across the path of the P/C. Two fatalities were casued by the other vehicle turning left across the path of the P/C and also with the other vehicle running into the rear of the P/C. All remaining conflict types, as detailed, resulted in one fatality each.

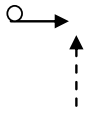
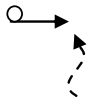
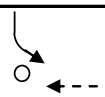
The table also shows that 6 out of the 11 P/C fatalities occurred were where the other vehicle involved was a car. Two fatalities occurred with a goods vehicle over 7.5t, and one fatality with each of a goods vehicle under 3.5t, a bus/coach, and 'other vehicle'.

Table 6.4 shows the ranked analysis of the conflicts which resulted in serious injury to the P/C between 2004 and 2010.

Table 6.4 Ranked analysis of the conflicts between vehicles in collisions resulting in a pedal cyclist being seriously injured in Edinburgh 2004-2010

		Conflict Between Pedal Cycle and:												
Conflict	**Description**	Pedal Cycle	Powered 2 wheeler	Car	Taxi	Goods under 3.5t	Goods 3.5t to 7.5t	Goods over 7.5t	Bus or Coach	Other Vehicle	No Other Vehicle	Multiple Vehicle	**Total**	**%**
	Other vehicle fails to give way or disobays junction control and collides with P/C			23	2	6				2			**33**	**17%**
	other vehicle turns right across path of P/C			26		4				1			**31**	**16%**
	P/C hits open door / swerves to avoid open door of other vehicle			15		2							**17**	**9%**
	No other vehicle involved. Loss of control										13		**13**	**7%**
	P/C and othervehicle travelling alongside each other			7	1			1	4				**13**	**7%**
	Other vehicle turns left across path of P/C			9				1	1	1			**12**	**6%**
	Other vehicle runs into rear of P/C		2	7			1						**10**	**5%**
	P/C rides off footway into path of other vehicle			6	1								**7**	**4%**
	P/C runs into rear of other Vehicle			3		3			1				**7**	**4%**
	P/C changes lane to right across the path of other vehicle			2	2	1			2				**7**	**4%**

Conflict	Description	Pedal Cycle	Powered 2 wheeler	Car	Taxi	Goods under 3.5t	Goods 3.5t to 7.5t	Goods over 7.5t	Bus or Coach	Other Vehicle	No Other Vehicle	Multiple Vehicle	Total	%
		Conflict Between Pedal Cycle and:												
	Other vehicle reverses into P/C			4		2							**6**	**3%**
	P/C hits parked vehicle			6									**6**	**3%**
	Other vehicle U-turns into path of P/C			1		4							**5**	**3%**
	P/C fails to give way or disobeys junction control & collides with other vehicle		1	4									**5**	**3%**
	Other vehicle changes lane to left across the path of P/C			5									**5**	**3%**
	Other vehicle turns left into path of P/C			5									**5**	**3%**
	Head on collision between P/C and other vehicle	1		1		2							**4**	**2%**
	Other vehicle starts off or pulls out into path of P/C			2							1		**3**	**2%**
	P/C turns right across path of other vehicle		1	1									2	**1%**
	Other vehicle turns right across path of P/C			2									2	**1%**

		Conflict Between Pedal Cycle and:												
Conflict	**Description**	Pedal Cycle	Powered 2 wheeler	Car	Taxi	Goods under 3.5t	Goods 3.5t to 7.5t	Goods over 7.5t	Bus or Coach	Other Vehicle	No Other Vehicle	Multiple Vehicle	**Total**	**%**
	P/C and other vehicle collide when both turning left			1									1	**1%**
	P/C looses control and collides with other vehicle			1									1	**1%**
	pedestrian steps out in front of P/C causing collision										1		1	**1%**
	P/C brakes and/or swerves to avoid (uninjured) pedestrian										1		1	**1%**
	P/C brakes and/or swerves to avoid contact with other vehicle. No contact made						1						1	**1%**
	Other vehicle turning off roundabout into stationary P/C at junction			1									1	**1%**
	TOTAL	**1**	**4**	**132**	**6**	**24**	**2**	**2**	**8**	**4**	**16**	**0**	**199**	**100%**

The table shows that the most common conflict in collisions (17%) which resulted in serious injury to a cyclist involved the other vehicle failing to give way or disobeying the junction control and colliding with P/C. The second most common conflict (16%) involved the other vehicle turning right across the path of the P/C. A further 9% of collisions involved the other vehicle opening the door causing the P/C to hit or swerve to avoid it.

Table 6.5 shows the breakdown of all vehicles involved in collisions resulting in serious injury to a P/C in Edinburgh between 2004 and 2010.

Two thirds (66%) of serious P/C collisions involved conflict with a car. Goods vehicles were involved in 14% of collisions resulting in serious injury to a P/C.

Table 6.5 All vehicles involved in collisions resulting in serious injury to a P/C in Edinburgh 2004 – 2010

Vehicle Type	Fatal 1996-2010	Serious 2004-2010
Pedal Cycle	0	1
Powered 2 wheeler	0	4
Car	6	132
Taxi	0	6
Goods under 3.5t	1	24
Goods 3.5t to 7.5t	0	2
Goods over 7.5t	2	2
Bus or Coach	1	8
Other Vehicle	1	4
No Other Vehicle	0	16
Multiple Vehicle	0	0
Total	11	199

6.4. Analysis of Contributory Factors in Pedal Cycle Collisions

Tables 6.6 and 6.7 show the top contributory factors assigned to P/C's and other vehicles involved in collisions resulting in one or more serious P/C casualties.

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 tables indicate the frequency that contributory factors were assigned to the participants of these collisions. This gives an indication of the actions that might have been taken by the cyclist and the other road users involved in the time of the collision.

Contributory factor data has been available to the City of Edinburgh Council since 2005. Prior to this date, the only data available details the assignment of the incident but not the contributory factor.

Table 6.6 details the contributory factors assigned to the cyclist and Table 6.7 details the contributory factors assigned to the driver of the other vehicle.

Table 6.6 Contributory factors assigned to the cyclist involved in collisions where one of more pedal cyclist was seriously injured in Edinburgh 2006-2010

Reference No.	Contributory Factor Detail	No. of times factor assigned to cyclist	%'age of cyclist	%'age of Total
405	Failed to look properly	24	24%	7%
406	Failed to judge other person's path or speed	19	19%	5%
410	Loss of control	11	11%	3%
602	Careless, reckless or in a hurry	8	8%	2%
403	Poor turn or manoeuvre	5	5%	1%
310	Cyclist entering road from pavement	4	4%	1%
302	Disobeyed "Give Way" or "Stop" sign or markings	3	3%	1%
408	Sudden braking	3	3%	1%
204	Defective steering or suspension	2	2%	1%
301	Disobeyed automatic traffic	2	2%	1%
605	Learner or inexperienced driver/rider	2	2%	1%
803	Failed to judge vehicle's path or speed	2	2%	1%
999	Other	2	2%	1%
102	Deposit on road (eg. oil, mud, chippings)	1	1%	0%
203	Defective brakes	1	1%	0%
307	Travelling too fast for conditions	1	1%	0%
409	Swerved	1	1%	0%
501	Impaired by alcohol	1	1%	0%
507	Cyclist wearing dark clothing at night	1	1%	0%
802	Failed to look properly	1	1%	0%
N/A	Unknown from 2004	6	6%	2%
	Total	**100**	**100%**	**28%**

Table 6.7 Contributory factors assigned to the other vehicle driver involved in collisions where one of more pedal cyclist was seriously injured in Edinburgh 2006-2010

Reference No.	Contributory Factor Detail	No. of times factor assigned to other vehicle	%'age of other vehicle	%'age of Total
405	Failed to look properly	90	35%	25%
406	Failed to judge other person's path or speed	41	16%	12%
403	Poor turn or manoeuvre	29	11%	8%
602	Careless, reckless or in a hurry	21	8%	6%
904	Vehicle door opened or closed negligently	15	6%	4%
302	Disobeyed "Give Way" or "Stop" sign or markings	10	4%	3%
407	Passing too close to cyclist, horse rider or pedestrian	8	3%	2%
402	Junction restart (moving off at junction)	4	2%	1%
601	Aggressive driving	4	2%	1%
401	Junction overshoot	3	1%	1%
410	Loss of control	3	1%	1%
710	Vehicle blind spot	3	1%	1%
301	Disobeyed automatic traffic	2	1%	1%
308	Following too close Driver/rider	2	1%	1%
408	Sudden braking	2	1%	1%
501	Impaired by alcohol	2	1%	1%
404	Failed to signal or misleading signal	1	0%	0%
507	Cyclist wearing dark clothing at night	1	0%	0%
605	Learner or inexperienced driver/rider	1	0%	0%
N/A	Unknown from 2004	14	5%	4%
	Total	256	100%	72%

The tables show that the most frequent coded factors for both the P/C and other vehicles were ‘failed to look properly’ and ‘failed to judge other persons path or speed’.

For all incidents resulting in serious injury to P/C’s, 72% of contributory factors were assigned to the other vehicle driver and 28% to the P/C.

Table 6.8 show the top contributory factors assigned to P/C’s and other vehicles involved in collisions resulting in a fatal P/C casualty.

The limited data shows that the most frequent coded factors for both the P/C and other vehicles were ‘failed to look properly’ and ‘poor turn or manoeuvre’.

For all incidents resulting in fatal injury to P/C’s, 66% of contributory factors were assigned to the other vehicle driver and 33% to the P/C.

Table 6.8 Contributory factors involved in collisions where one of more pedal cyclist was fatally injured in Edinburgh 1996-2010

Reference No.	Contributory Factor Detail	No. of times factor assigned to other vehicle	No. of times factor assigned to cyclist
403	Poor turn or manoeuvre	1	1
405	Failed to look properly	2	1
410	Loss of control	1	
501	Impaired by alcohol	1	
602	Careless, reckless or in a hurry		1
N/A	Unknown from 1996 - 2004	5	
N/A	Unknown from 1996 - 2004		2
	Total	**10**	**5**

7. Summary & Conclusions

7.1. Summary of Cyclist Incident Analysis

How Many?

Between the years of 2004 and 2010 there were 9,326 personal injury road traffic collisions reported to the police in Edinburgh, resulting in 11,091 casualties. Of these casualties, 1307 (12%) involved injury to pedal cyclist.

P/C casualties have increased by 26% between 2004 and 2010. There has been relatively little change to the rate of cyclist fatalities since 2004. Serious cyclist casualties have increased from 20 to 30 (50%).

The total number of P/C casualties is primarily made up of slight casualties with 85% of all cycle casualties recorded.

There have been eleven cycle fatalities since 1996. There has only been one year when the total number of cyclist fatalities has exceeded one, that being two fatalities in 2004.

Pedal cycle usage has increased steadily since 2004, The 2010 figure for CEPATS defined Edinburgh cordon is a 46% increase over the trips totals collated in 2004.

The rate of increase in cycle flow has generally been greater than the rate of increase of cyclist casualties. When considering KSI cyclists only, the rate of increase in the KSI's has been higher than the rate of increase in cycle flow until 2009.

Who?

Between 2004 and 2010 there were 1307 personal injury road traffic collisions reported to the police in the Edinburgh area. The majority 1102 (84.3%) of P/C casualties were slightly injured, with almost 200 (15.2%) seriously injured and less than 1% (6 P/C's) killed.

There is a significantly higher rate of male casualties than female casualties with a total of 1003 (77%) male casualties during this period compared to 304 (23%) female casualties.

75% of P/C casualties were aged between 20 and 49 years, with 57% between the ages of 20 and 39 years.

The highest numbers for both male and female casualties occurred in the 25-29 year age band, with together accounted for 17.5% of the total P/C casualties.

The highest severity ratio (30%) was found in the age band 60-64.

When?

Over three quarters (83%) of P/C casualties were injured in the 12 hour period between 7am and 7pm.

A quarter of all P/C casualties were injured between 7am and 10am, and 34% were injured between 4pm and 7pm.

77% of P/C casualties were injured during daylight hours, whilst 23% were injured during darkness hours.

85% of P/C casualties were injured on a weekday, an average of 17% per weekday, with 8% on a Saturday and 7% on a Sunday.

Almost 60% of P/C casualties were injured in the 6 month period May – October, with numbers peaking in August.

Over 50% of P/C casualties in November, December and January were injured in the dark.

Where?
There is no particular hotspot of cycle casualties in Edinburgh with respect to postcode, with many of the high density areas showing similar instances of P/C casualties.

38% of P/C casualties were injured on A-class roads, with 15% and 6% injured on C-class and B-class roads respectively. The number occurring on unclassified roads accounted for 41%.

74% of P/C casualties were injured at or within 20m of a junction

37% of P/C casualties were injured a t a 'T' or staggered junction, 17% at a crossroads, and 9% at a roundabout.

The locations of incidents which have resulted in serious injury to P/C's show a general migration of incidents towards the main A-class roads and distributors.

How?
The vast majority of incidents (81%) occur when the weather conditions are fine, 13% when the weather conditions are wet, and 6% undefined.

77% of cyclists were injured while 'going ahead' i.e. just riding along the road.

The most common conflict in collisions (17%) which resulted in serious injury to a cyclist involved the other vehicle failing to give way or disobeying the junction control and colliding with P/C. The second most common conflict (16%) involved the other vehicle turning right across the path of the P/C. A further 9% of collisions involved the other vehicle opening the door causing the P/C to hit or swerve to avoid it.

Two thirds (66%) of serious P/C collisions involved conflict with a car. Goods vehicles were involved in 14% of collisions resulting in serious injury to a P/C.

For all incidents resulting in serious injury to P/C's, 72% of contributory factors were assigned to the other vehicle driver and 28% to the P/C.

The most frequent causation factors for both the P/C and other vehicles were 'failed to look properly' and 'failed to judge other persons path or speed'.

8. Conclusions

8.1. Conclusions

This report looks into the scale and nature of road traffic collisions resulting in injury to pedal cyclists in the Edinburgh City area. It gives an overview of pedal cyclist (P/C) casualties for the period 2004 to 2010 and then looks in detail at the profile of the casualties and factors relating to the collisions that occurred during this period.

The report provides background information in relation to the Road Safety Plan for Edinburgh to 2020. The road safety plan has identified the need to assess the vulnerability of cyclists on the road network through incident analysis and the requirement to identify patterns of cyclist collisions occurrence and notable cycle groups at risk.

With regard to target groups, the data analysis has highlighted that the causation factors attributed to the incidents resulting in P/C injury were almost 75% assigned to the driver of the vehicle as opposed to the cyclist. This suggests that driver behaviour and awareness of cyclists needs to improve through perhaps educational means.

The most vulnerable cyclist group to injury appears to be males in the 20 to 49 year age band. Numerous target groups can be identified from the analysis for consideration of cycle training / educating etc.

With a high number (50%) of P/C casualties being injured during darkness hours over the winter months, consideration may be given to visibility measures for cyclists. This may also assist with the noted number of causation factors attributed to the driver not seeing the cyclist.

A high proportion (38%) of P/C casualties were injured on an A-class road and 74% of P/C casualties were injured at or within 20m of a junction. The locations of incidents which have resulted in serious injury to P/C's show a general migration of incidents towards the main A-class roads and distributors. From this information, it appears that there is potential to reduce cycling incidents by providing physical road improvements through the main corridors and junctions. Potential measures could include the following non-exhaustive measures:

- Cycle advance stoplines (ASL's)
- Cycle lanes (and continuous lanes across junctions)
- Cycle pre-signals
- Segregated networks (where possible)
- 20mph zones through residential areas
- Toucan Crossings
- Raised tables at uncontrolled junctions
- Trixi Mirrors

Such measures would require to be considered in line with the existing cycle route network to create interconnected corridors of safe cycle routes within the city.

The data relating to cycle usage in Edinburgh over the last few years has shown a trend towards a significant increase in cycle usage. By identifying potential physical improvement and educational / awareness measures, the council is targeting their limited resources to where they have the largest impact, as detailed in the current Road Safety Plan for Edinburgh 2020.

These potential measures also help to nurture and support the existing mode shift to more sustainable transport modes and provides cyclists with more confidence of their safety on the road. A continued increase in cycle usage in Edinburgh also supports the 'safety in numbers' theory which suggests that the more cyclists there are, the safer the roads will be.