



Cycle Safety Action Plan

Working together, towards roads free
from death and serious injury

MAYOR OF LONDON



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Foreword

This plan comes at an exciting time for cycling in the Capital. Summer 2014 saw record numbers of Londoners out on their bikes and cycling is booming on Transport for London's (TfL's) road network, with a 173 per cent increase since 2001.

We have recently launched consultations on new infrastructure that will transform the experience of riding in London. The East-West and North-South Cycle Superhighways will provide two continuous, largely segregated routes through the centre of the city.

These, together with upgrades to existing infrastructure and junction schemes such as the major redesign of the Elephant & Castle northern roundabout, form part of an unprecedented £900m investment in cycling.

As we plan and carry out these works, safety is at the forefront of our minds.

But investing in infrastructure – safer streets, cycle paths and facilities – is only part of the solution.

This new plan goes much further, including detailed analysis of who is being injured and why. Armed with this knowledge, and with our stakeholders and partners, TfL has developed a plan that looks at the whole equation of cycle safety and the best ways to reduce casualties.

Alongside the investment in engineering schemes, we have plans for continued enforcement against dangerous and illegal behaviours by road users. Our high-profile marketing campaigns will bring balance to the debate, by showing drivers and cyclists how they can keep themselves and each other safe. We will work with London's boroughs to manage speed and put in place 20mph limits and zones where appropriate. We will also continue to pursue new technologies, including trialling cyclist detection equipment for lorry and bus drivers.

Our thanks for their support and dedication in developing this plan go to the Metropolitan Police Service, City of London Police, London Cycling Campaign, CTC the national cycling charity, Sustrans, Roadpeace, British Cycling, Freight Transport Association, Road Haulage Association, The Association of Bikeability Schemes, with representation from London boroughs through the London Government Technical Advisers Group, London Councils and the Borough Cycling Officers Group.

In publishing London's new Cycle Safety Action Plan, we look to these stakeholders and all others involved in cycle safety, to work together to deliver the improvements needed to make the Capital a place where cyclists truly feel they belong and are safe.

Leon Daniels, Managing Director of Surface Transport

1. Setting the scene

1.1 Introduction

The Capital's streets and the way we travel on them are changing. More and more people are seeing the benefits of taking to two wheels. The Mayor's Cycling Vision¹, published last year, sets out a vast programme of work – enabled by £913m of investment – to support this growth and transform the experience of cycling in the Capital.

A core aim of the Mayor's Roads Task Force (RTF)² was to transform conditions for cyclists. It included a clear and compelling case for change in the Capital. The RTF recommendations – and the commitments made in TfL's response – will greatly improve the experience of travelling and living in London. Increased cycling will help address traffic and congestion problems and reduce overcrowding on many parts of the transport network. Other benefits of more cycling include improved health³, better air quality and an enhanced quality of life, both for those cycling and for those living, working or visiting areas where cycling is increasingly popular. Cyclists, in particular, will benefit from trials of innovative road layouts and safety technologies, while enhancements to street and junction designs will improve the quality and safety of infrastructure provided for cyclists.

Among the many improvements in the future will be more and better infrastructure such as new Cycle Superhighways, a network of new backstreet Quietways, a central London grid of linked cycle routes and greater segregation of cyclists from traffic where necessary and appropriate. A major programme of work is under way to target some of the worst junctions for cycling in London and to improve their safety.

Safety is at the core of this work. Making streets safer for the bike is one of four key outcomes of the Cycling Vision. This supports the wider aims of Safe Streets for London⁴, our road safety action plan, which seeks to reduce the number of people killed or seriously injured on London's roads by 40 per cent by 2020 and to work towards roads free from death and serious injury.

Meeting this casualty reduction target is a top priority for both TfL and the Mayor, demonstrated by the recent publication of Safe London streets: Our six road safety commitments⁵:

1. To lead the way in achieving a 40 per cent reduction in the number of people killed or seriously injured on the Capital's roads by 2020 – with a longer term ambition of freeing London's roads from death and serious injury

¹ The Mayor's Vision for Cycling in London, Greater London Authority (2013)

² The Mayor's Roads Task Force (2013)

³ More information is provided in Improving the Health of Londoners: transport action plan 2014, TfL (2014)

⁴ Safe Streets for London: A Road Safety Action Plan 2020, TfL (2013)

⁵ Safe London streets: Our six road safety commitments, TfL (2014)

2. To prioritise safety of the most vulnerable groups – pedestrians, cyclists and motorcyclists – which make up 80 per cent of serious and fatal collisions
3. To provide substantial funding for road safety, invested in the most effective and innovative schemes
4. To increase efforts with the police, boroughs and enforcement agencies in tackling illegal, dangerous and careless road user behaviour that puts people at risk
5. To campaign for changes in national and EU law to make roads, vehicles and drivers safer
6. To work in partnership with boroughs and London's road safety stakeholders to spread best practice and share data and information

We are committed to focusing on road safety improvements for the most vulnerable road users, including cyclists. The principles of the 'safe system' approach underpin Safe Streets for London. This plan takes into account that people make mistakes; that there are physical limits to what the human body can tolerate; and that road safety is a shared responsibility. All road users should be mindful of their own responsibilities about their own safety and that of others and we are working with different user groups to raise awareness of this.

This new Cycle Safety Action Plan (CSAP) builds on the original, published in 2010, as well as the Cycling Vision and Safe Streets for London. It has been developed with the insight and expertise of stakeholders, who regularly met as a working group and contributed to the actions consolidated in the plan. These actions were also revised following public consultation of the draft plan. The new plan focuses on understanding the risks and challenges faced by cyclists on London's roads and uses an intelligence-led approach to identify the most effective and significant interventions.

Improving the safety of our road infrastructure is a central focus of this new plan, particularly in the design of junctions, roundabouts, signals and cycle lanes. We have championed innovations, such as the use of advanced cycle signals, advanced stop lines and blind spot safety mirrors and will continue to invest in and develop the best and safest solutions for the Capital. We will trial innovative road layouts and safety technologies and fund the development of our engineers and designers and those in the London boroughs.

In publishing this plan we look to these stakeholders, and all others involved in cycle safety, to work together to deliver the improvements needed to make London a place where cyclists truly feel they belong and are safe.

1.2 Summary

Much has already been done to improve cyclist safety, with many successful initiatives created and expanded over the last few years. Indeed, delivery of the actions laid out in the first CSAP has been largely completed.

If we are to create a city fit for cycling and achieve both the Mayor's targets of growing cycling and reducing the number of people killed or seriously injured (KSI), then much remains to be done.

To meet these targets and to create a new, re-invigorated CSAP, it is essential to understand the continuing challenges for cycle safety in the Capital.

2. More and safe cycling

2.1 Cycle collisions and casualties

Road safety is a key priority for the Mayor and in recent years substantial progress has been made in reducing all casualties in the Capital.

Cycling in London has become significantly safer at a time when the numbers of people cycling have risen inexorably. Cycling on the Capital's main roads – the Transport for London Road Network (TLRN) – has almost tripled in the past decade and the number of cyclists fatally injured per journey cycled in the Capital has reduced by a third (33 per cent) between the 2005-09 baseline and 2012⁶.

Nevertheless, there were 489 cyclist KSIs on London's roads in 2013, representing 21 per cent of all KSIs in London that year. This plan reflects the need to continue improving safety in the Capital.



To reduce KSI casualties by 40 per cent by 2020, cycle safety must be a major consideration in all road safety activities, as well as in the wider transport planning and delivery in the Capital. This plan is informed by a detailed analysis of the risk faced by London's cyclists. This sheds light on those who are injured in cycle collisions; when, where and why these collisions occur; which other vehicles are involved in these collisions; and what can be done to make cycling safer.

⁶ 2012 is the most recent cycle journey data available from London Travel Demand Survey (LTDS)

2.2 Cycling in London

Cycling is a well-established mode of transport in the Capital and the Mayor's target to increase the cycling mode share to five per cent by 2026 will further establish its presence on London's roads. In 2012, nearly 600,000 trips a day in the Capital were made on a bicycle. This is equivalent to around 10 per cent of the daily journeys made by bus and 20 per cent of those made using the Underground. It is similar to the number of daily trips made using the London Overground and the Docklands Light Railway (DLR) combined.



While only two per cent of all trips in London in 2012 were made on a bicycle, its importance is greater in the places and at the times that other transport modes are most crowded. This was clearly demonstrated by the results of the recent Central London cycle census, undertaken in April 2013⁷. This showed that, across the day, cycling was the second largest road-based mode, after cars and light goods vehicles, accounting for 16 per cent of all road-based traffic in central London at peak times. In the morning peak, cycling was the second largest mode, after car/light goods vehicles, accounting for 24 per cent of traffic. In some places, such as Southwark Bridge, Bow Street and Tavistock Place, more people travelled by bicycle during the morning peak than by all other vehicular modes put together.

Levels of cycling fluctuate by as much as 40 per cent between the summer high and the mid-winter low; however, the overall increase in cycling means that winter cycling

⁷ Central London Cycle Census, Technical Note, TfL (2013)

levels continue to be significant. For example, the level of cycling during winter 2012/13 was higher than the summer peak of cycling in 2004/05 (see Figure 1).

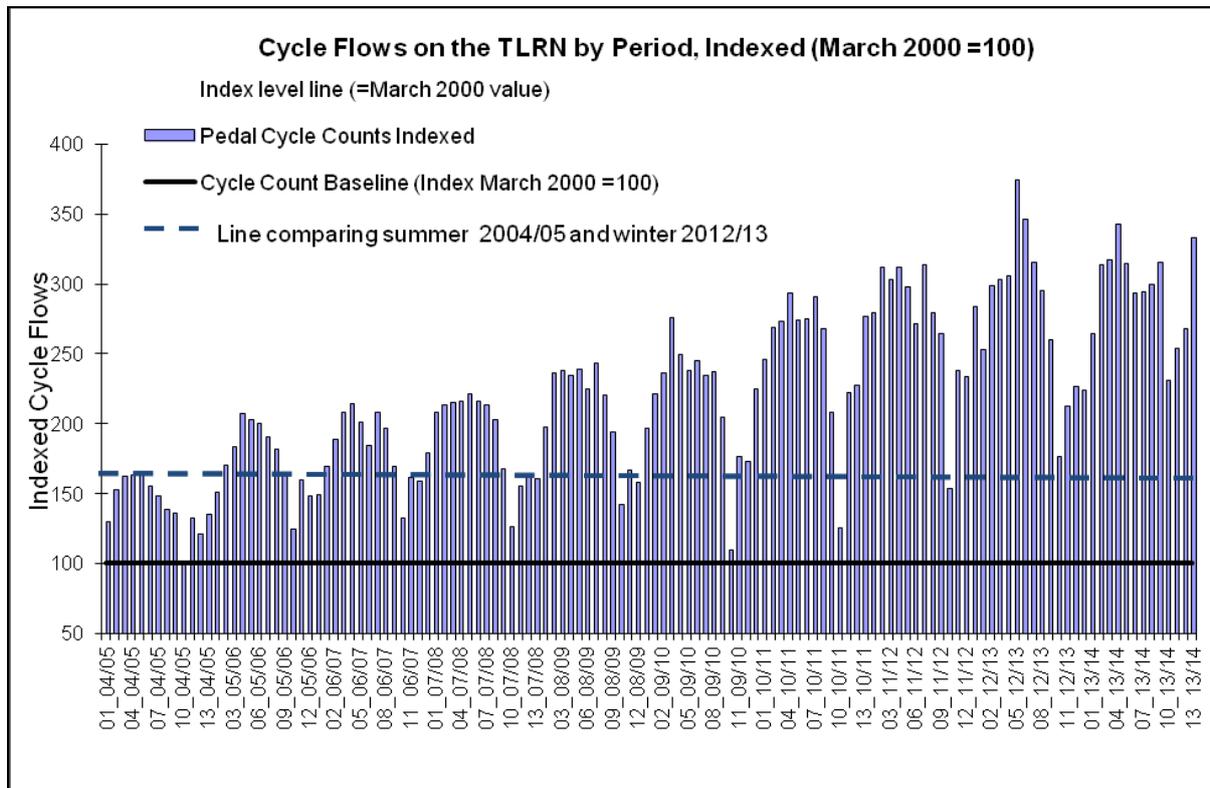


Figure 1: Cycle and traffic flows on the TLRN by period

2.3 Perception of safety

There is significant potential to get infrequent cyclists on their bikes more. Achieving this is central to meeting the Mayor’s cycling target of 1.5 million trips per day by 2026. The main barrier to achieving this is cyclists’ perception of safety. Among non-cyclists and occasional cyclists, safety concerns are most likely to be cited as a deterrent to taking up cycling or increasing the amount of cycling they do. Nine out of 10 people surveyed in TfL’s annual survey on attitudes to cycling agreed that cyclists are vulnerable to collisions with other road users.

The perception of cycle safety is not just a barrier to more people taking up cycling, it could also cause existing cyclists to reduce the amount they cycle or even give up cycling altogether. Reasons cyclists give for cycling less over safety concerns include: traffic too busy (50 per cent); fear of collisions (33 per cent); other road users (10 per cent); and press coverage (nine per cent)⁸.

⁸ Attitudes towards cycling in London, TfL (2012)



This plan, taken as a whole, seeks to improve the reality and the perception of cycle safety. Putting into action the range of activities set out in Chapter 4, through the safe systems approach, will improve both the actual and perceived safety of cyclists on London's roads.

2.4 National and international comparisons

Statistically, cycling in the Capital performs well compared against national statistics. While London accounted for 12 per cent of Great Britain's cyclist fatalities in 2012, the TLRN accounted for 17 per cent of the national cycling volume on major roads.

Other cities across Europe may have proportionally more cyclists, but London had fewer cyclist fatalities per million population in 2012 than many of these European cities.

International data comparisons of cyclist fatality should ideally be normalised for exposure using a common denominator such as journeys cycled or distance cycled. However, a lack of data in major international cities, including those where cycling is a popular mode of transport, presents a challenge for international benchmarking. Given that population data is readily available, it currently provides the only measure for comparison. TfL continue to seek accurate data to benchmark cycling risk in London with cyclised cities.

2.5 Summary

London needs more people to cycle and to cycle more often. While the number of cyclists killed has declined over time, there is still more to do, particularly to reduce the number of cyclists being seriously injured.

Policies seeking both a growth in cycling and a reduction in cyclist casualties are not incompatible, provided the safety of cyclists is given priority in the initiatives that TfL, the London boroughs and the Mayor put in place across London. Making our streets safer and feel safer for cycling means more people will cycle.

Whether real or perceived, the issue of safety is preventing many people from cycling who would benefit from it and, in turn, benefit London. TfL is seeking to improve cycle safety in the Capital so it can stand shoulder to shoulder with the best cities internationally recognised for safe cycling. This plan sets out how TfL and its partners in cycle safety can achieve this goal, based on our detailed understanding of the causes of cyclist injury.

3. Understanding the causes

This section describes who is being injured, where cyclists have collisions and when and why they occur. This knowledge has been used to identify actions to improve cycle safety in London.

3.1 Cycle risk in London: who, where, when?

Safe Streets for London and this plan are based on an understanding of risk and used to identify locations where, and for whom, safety can be improved. This puts risk at the heart of road safety assessment, helping practitioners find the best way to target resources where they will be most effective.

This new analysis combined collision and casualty data from STATS19⁹ with detailed journey data from the London Travel Demand Survey (LTDS). STATS19 is information that is reported by the attending police officer at the scene of a collision. LTDS is a rolling sample survey of travel by households in London, with an annual sample size of 8,000 households. It provides accurate quantitative data that represents the diversity of people and places in the Capital. Over time, this builds up to a comprehensive and detailed picture of the travel behaviour of residents. These two data sets are combined to calculate the rate of KSI casualties per billion kilometres travelled. This rate is a measure of risk.

The KSI rate per billion kilometres travelled and absolute number of casualties for each of the main road user groups during the three-year period 2008-2011 is presented in Figure 2 (see page 13). The y-axis in Figure 2 is shown using a logarithmic scale, allowing a large range of values to be better displayed.

Cyclist casualties: who?

Cyclists face the second highest level of risk of road users in London, after motorcyclists. Different levels of risk are experienced by cyclists of different ages. The risk for cyclists peaks at a rate above 1,000 KSI casualties per billion kilometres for child and teenage cyclists, before gradually declining with age through to the 45-49 age band, where risk is approximately one-third of that for 10 to 14-year-olds. Risk then begins to increase again for older cyclists, though the confidence level in the data is low due to small numbers of journeys. The risk for each age group is depicted by the red line in Figure 2. The highest casualty numbers occur among cyclists aged 25-39 years, reflecting the high levels of cycling in this group. This is indicated by the size of the circles. A number of measures are proposed in this action plan to address this problem, for example see actions 24 and 25 in Chapter 4.

⁹ STATS19 is the term given to records of personal injury recorded by the police and used to monitor collision and casualty numbers in London. STATS19 records for Greater London are held in TfL's ACCSTATS database

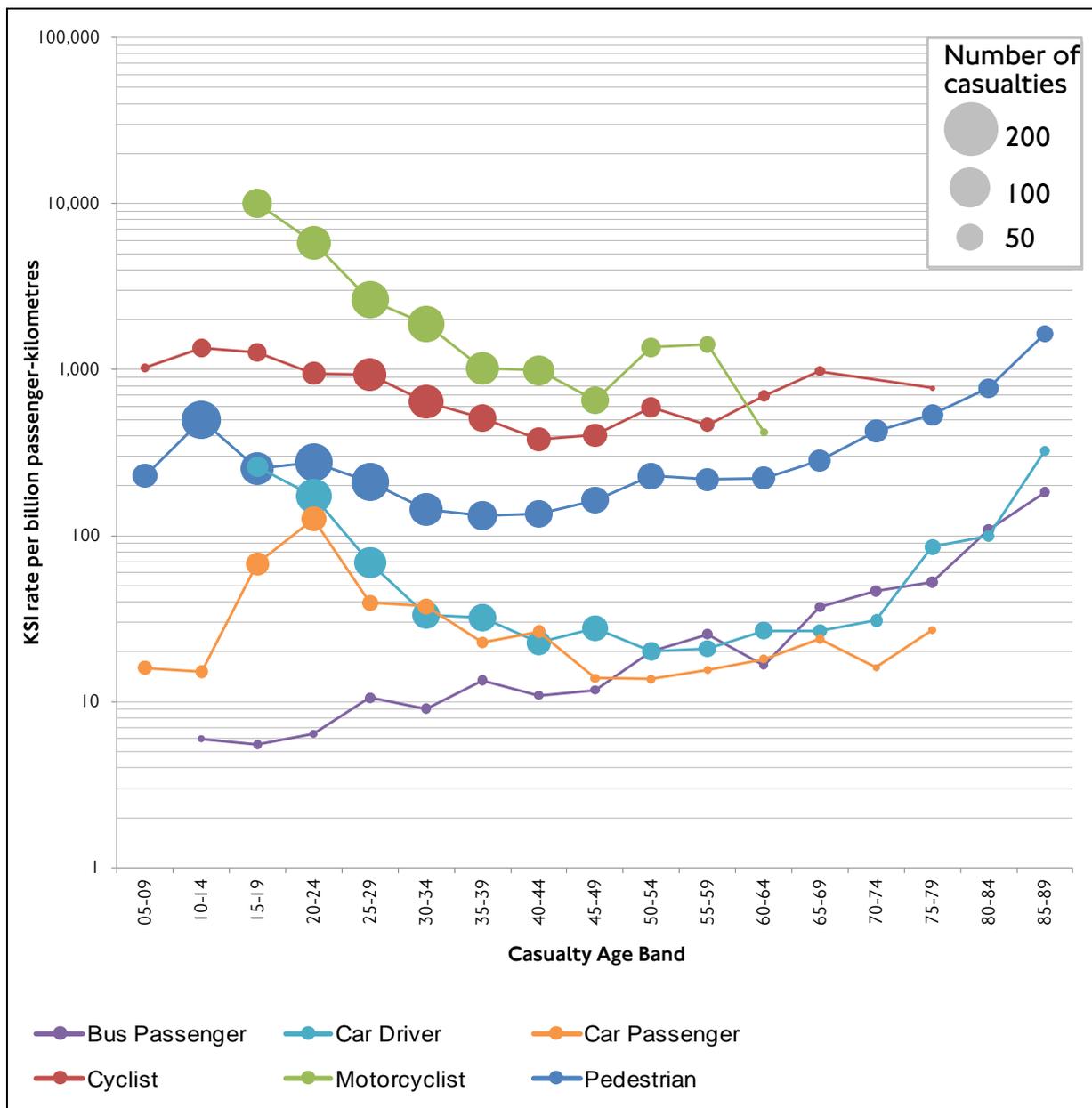


Figure 2: KSI casualty rate per billion kilometres by age and road user group¹⁰

Gender

The ratio of male to female cyclist KSIs is 4:1. This broadly reflects the gender ratio for the number of kilometres cycled, although men do experience a small, but statistically significant, increased risk in comparison to women.

Ethnicity

Black, Asian and minority ethnic (BAME) road users are at higher risk of death or serious injury than non-BAME individuals across every mode of transport, except when travelling by bus. BAME cyclists experience approximately twice the risk of non-BAME cyclists. The risk inequality among BAME cyclists, as well as those living

¹⁰ The circle area marker represents the absolute number of KSI casualties

in areas of social deprivation, will be addressed through the full range of actions provided in this plan, and in particular, through actions 24 to 28.

Vehicle involvement

Table 1 illustrates the vehicles that are disproportionately involved in collisions with cyclists. Where the ratio is above one, these modes are overrepresented in casualty statistics. This means that they are involved in a large number of collisions resulting in a cyclist KSI relative to their traffic share - although it may be that they are involved in a small number of collisions overall.

Table 1: Ratio of cyclist KSI injury and collision involvement by mode share (2010-12)¹¹

Vehicle involved in collision	Number of KSI collisions involving a cyclist (2010 to 2012)	Ratio of involvement to mode share
Car	1,140	0.9
Light Goods Vehicles	176	0.9
Taxi/ private hire	75	4.0
Medium and Heavy Goods Vehicles (over 3.5T)	74	1.4
Bus	72	2.3
Motorcycle	51	1.4

Source: STATS19 and Department for Transport data

In almost three-quarters of cycle KSI collisions between 2010 and 2012¹¹, the other vehicle involved was a car. However, heavy goods vehicles (HGVs) are disproportionately involved in fatal collisions with cyclists, with almost half (45 per cent) of all fatal collisions over these three years involving an HGV even though these vehicles make up just 3.5 per cent of motorised vehicle kilometres travelled in London.

Taxis/private hire vehicles, buses/coaches and motorcyclists were also disproportionately involved in cyclist collisions, although these tended to involve serious injury rather than fatalities. While some modes may be over-represented in terms of traffic share, the number of KSI casualties may be small. Between 2010 and 2012¹¹, motorcycles were involved in collisions which resulted in 51 cyclist KSIs, which was less than three per cent of all cyclist KSIs during that three-year period: taxis/private hire vehicles and buses/coaches were involved in just over four per cent each. As TfL indirectly controls taxis and buses, action will be taken to address this disproportionate involvement, for example, see actions 9 and 16 to 19 in Chapter 4.

¹¹ 2012 is the most recent data available from DfT

Cyclist casualties: where?

In 2013, 20 per cent of all collisions in London resulted in injury to a cyclist. Nearly a third of collisions involving a cyclist in 2013 occurred on the TLRN, with more than two-thirds occurring on borough roads. The 580km of TLRN constitutes only five per cent of London's total road length, but carries more than 30 per cent of traffic.

KSI casualty rates vary geographically, as highlighted in Figure 3. While data for cyclist KSI rates does have a degree of uncertainty of around +/-25, the map still provides important information on the pattern and distribution of collisions. This map illustrates cycle risk rates across London. It reflects both the number of cyclist KSIs and the distance cycled in kilometres. For example, Richmond upon Thames has a lower KSI casualty rate per kilometre cycled than the City of London. Risk rates vary across London with pockets of higher risk in both outer and inner London, however, in terms of absolute numbers, there are significantly more casualties in inner London due to the greater number of journeys made. This information is valuable in ensuring that cyclist safety activity is effectively targeted, to the areas and locations of highest KSI numbers and overall risk.

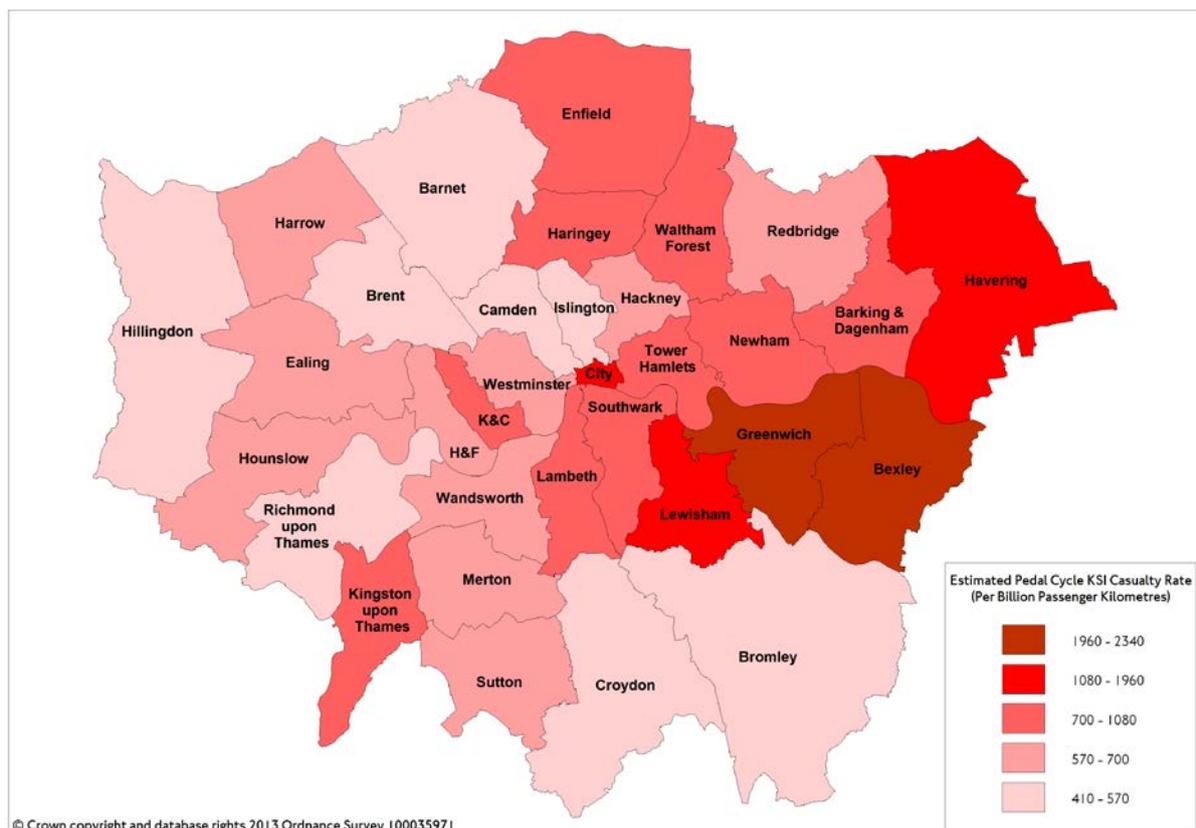


Figure 3: Cyclist KSI casualty rate per billion kilometres by borough¹²

Figure 4 shows the location of collisions resulting in one or more cyclist KSI casualties occurring between 2011 and 2013, along with the TLRN and borough

¹² Based on LTDS data from April 2008 to March 2011. Original data from Road Risk and Vulnerable Road User Working Paper, TfL (2014)

boundaries. The map shows that cyclist KSIs occur all across London with a higher density occurring in more central parts of London, where more cycle journeys take place.

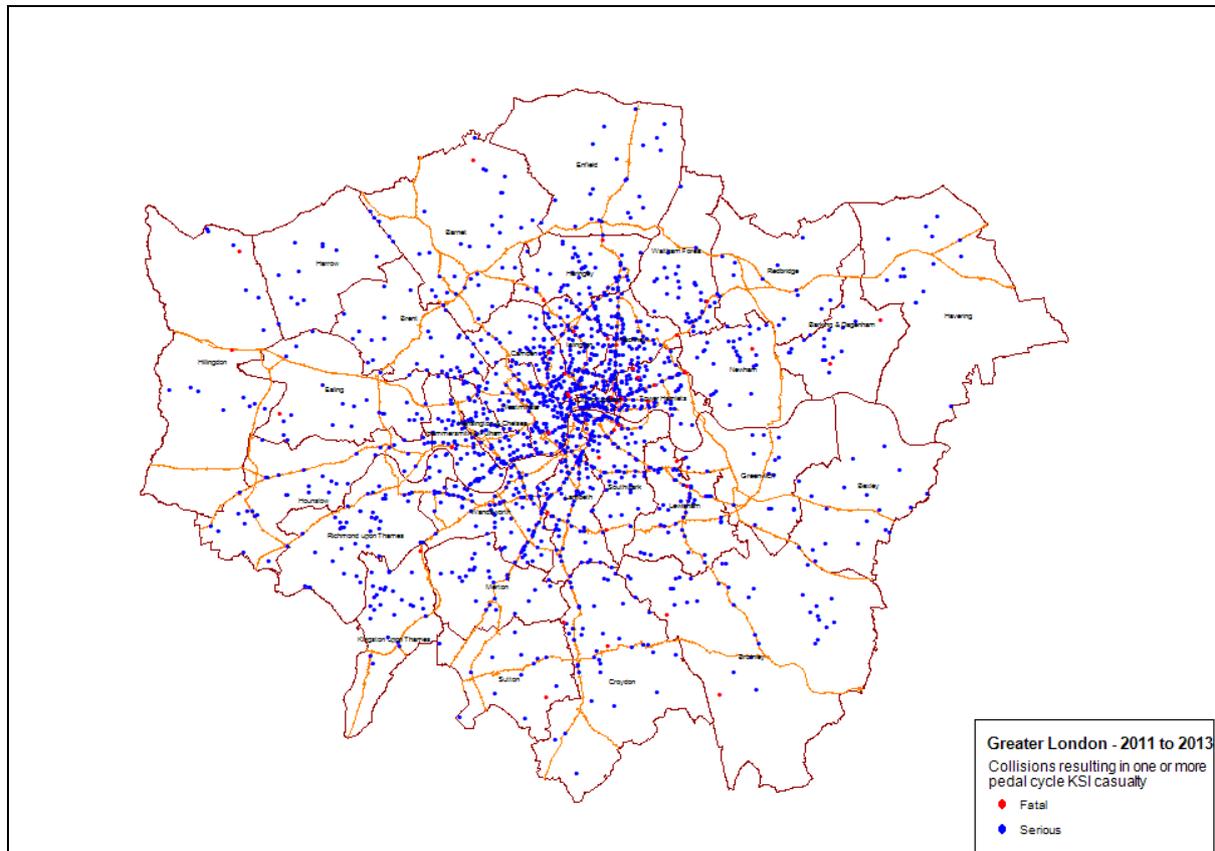


Figure 4: Collisions resulting in one or more cycling KSI casualty during 2011-13

Junctions

Some 84 per cent of cyclists injured in 2013 were at or within 20 metres of a junction. This highlights the particular vulnerability of cyclists at junctions¹³.

Most cyclist casualties occur at 'T' and staggered junctions (53 per cent), a further 18 per cent take place at cross roads and six per cent at roundabouts, while 16 per cent of collisions do not occur within 20m of a junction¹³. This shows the importance of safe junction design and operation, particularly focusing on visibility, predictability and speed reduction as key design principles¹⁴, something the Better Junctions programme¹⁵ and the Cycle Superhighways seek to achieve. A number of measures

¹³ Collisions and Casualties 2012, TfL (2013)

¹⁴ Cycling Safety: Key Messages, International Transport Forum Working Group on Cycling Safety, OECD (2012) – Recommendation 8, P.9

¹⁵ The Better Junctions Programme will make substantial improvements at 33 locations across London, including some of the most intimidating and high profile junctions and gyratories in London

are proposed in this action plan to address this problem, for example see actions 2 and 3 in Chapter 4.

Street types

The RTF classification of street-types in a London 'street family' recognises the many functions our streets and public spaces perform. It will enable greater thinking around appropriate schemes and traffic speeds across the Capital. In future, this change in the way streets are considered will result in more appropriate traffic speeds and cycling facilities for the different street-types which should help further reduce collisions.

Cyclist casualties: when?

The number of cyclist KSI casualties is slightly higher in the summer months compared to winter, reflecting higher cycling levels. When comparing the rate of KSIs per billion kilometres cycled on different days of the week, Monday to Friday remains fairly constant, with a slightly higher rate of KSIs per kilometre cycled on Saturdays when fewer kilometres are cycled.

3.2 Cycle conflicts: why?

In-depth knowledge of the details of collisions, including the conflicts, manoeuvres, other vehicles and behaviours involved, informs what action is needed to improve the safety of cyclists. The most common types of manoeuvre involved in collisions are summarised in Table 2 on page 18. The indicative diagram shows the direction of the cyclist (shown by the dotted line) and the other vehicle.

Three of the most common conflicts resulting in serious injury to cyclists involved another vehicle turning across the path of the cyclist: conflicts ranked (1) – right turning vehicles in opposing traffic; (4) left turning vehicles; and (5) right turning vehicles disobeying a junction control (for example, traffic signal or give way marking).

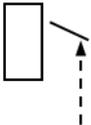
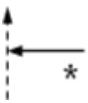
Where other drivers turn across the path of a cyclist, this can be because the cyclist, when filtering through traffic, is not seen by the driver; the driver's sight may be compromised by barriers to their view, such as the car's 'A' pillar or queuing traffic. In the case of left turning vehicles, drivers may not look for cyclists on their nearside before turning or – for HGVs in particular – there may be blind spots around the vehicle which may render a cyclist 'invisible' to the driver. A number of measures are proposed in this action plan to address this problem, for example see actions 15 and 22 in Chapter 4.

Drivers and passengers opening their doors in the path of a cyclist is the second ranked conflict type. Often cyclists do not feel able to take the primary position in the road (for example, further out from parked cars). Some do not know that the primary position is safer for them and that when cycling in the primary position, they are far

enough away from parked vehicles to avoid being struck by an opening door. A number of measures are proposed in this action plan to address this problem, for example see action 24 in Chapter 4.

The conflict type ranked third arises when the cyclist and the other vehicle involved are travelling alongside each other. Examples could include: overtaking; undertaking; a vehicle passing too closely; unsteady bicycling; and infrastructure pinch points. A number of measures are proposed in this action plan to address this problem, for example see action 20 in Chapter 4.

Table 2: The five conflict types most commonly resulting in KSIs to cyclists during 2011-13

Conflict rank	Indicative diagram	Manoeuvre description	Seriously injured casualties (% of total)	Fatal casualties (% of total)
1		Other vehicle turns right across path of cyclist	243 (14%)	2 (5%)
2		Cyclist hits open door / swerves to avoid open door of other vehicle.	160 (10%)	2 (5%)
3		Cyclist and other vehicle travelling alongside each other.	146 (9%)	4 (9%)
4		Other vehicle turns left across the path of cyclist	125 (9%)	11 (25%)
5		Other vehicle fails to give way or disobeys junction control and collides with cyclist	96 (6%)	1 (2%)

Speed

Speed can be a contributory factor in collisions and may be attributed to both the cyclist and the other vehicle involved. Where speed of the other vehicle involved is identified as a factor in a cyclist collision, it is more than twice as likely to result in a fatal or serious casualty. Around 10 per cent of all cyclist KSI casualties resulting from collisions, speed was an identified factor. A number of measures are proposed in this action plan to address this problem, for example see action 21 in Chapter 4. Traffic speeds are also a key reason many people give for not cycling more, so a reduction in speed may assist with the perception of cycle safety.

Young cyclists

Child and teenage cyclists under the age of 20 are most commonly involved in conflicts where the cyclist rides off a footway into the path of another vehicle. This is particularly true among child cyclists, representing almost half of serious injuries to cyclists under 16 years old.

It is also more common for cyclists under the age of 20 to be seriously injured after disobeying a junction control or give way marking. This is the second most common conflict type for young cyclists. A number of measures are proposed in this action plan to address this problem, for example see action 26 in Chapter 4.



Driver (in)experience

It is not just the types of other vehicles involved in collisions with cyclists that is of interest; but also their drivers. Younger drivers, aged 17-34, are over-represented in collisions which involve serious injury to cyclists. From the age of 35 onwards drivers are involved in fewer of these collisions relative to their journey stage share. This pattern is true for both genders. A number of measures are proposed in this action plan to address this problem, for example see actions 13 and 20 in Chapter 4.

Fatal cyclist collisions

The five conflict types most commonly resulting in cyclist fatalities during 2011-13 were:

1. Other vehicle turns left across the path of cyclist (25 per cent)
2. Other vehicle runs into rear of cyclist (14 per cent)
3. Cyclist rides off footway into path of other vehicle (14 per cent)
4. Cyclist and other vehicle travelling alongside each other (nine per cent)
5. Other vehicle turns right across the path of cyclist (five per cent)

A quarter of cyclist fatalities occurred when another vehicle turned left across the cyclists' path. The vehicle turning left was an HGV in 72 per cent of these types of collisions. Close proximity to another vehicle is a factor in a further 23 per cent of fatal collisions, where either another vehicle runs into the rear of the cyclist or the two are travelling alongside each other. A number of measures are proposed in this action plan to address this problem, for example see actions 15 and 16 in Chapter 4.

HGVs

HGVs are disproportionately involved in cyclist fatal collisions compared to their traffic share. Almost half of the 44 cyclist fatalities during the period 2011-13 were as a result of a collision with a lorry. Of these 21, 10 involved a collision with a left-turning lorry.

TfL has worked with the construction industry to develop the Construction Logistics and Cyclists Safety (CLOCS) programme. CLOCS aims to revolutionise the management of work-related road safety, to ensure it is considered equal to the management of health and safety on site, and provides best practice for other logistics sectors.

TfL is also working with fleet operators and vehicle manufacturers to increase the availability and uptake of safer lorries with maximum driver direct vision and safety equipment fitted as standard. The TfL 'Safe Urban Driving CPC course has been completed by more than 10,000 drivers since 2011 and includes training for drivers in vulnerable road user safety.

TfL is also collaborating with the London boroughs to deliver the Mayor's proposed Safer Lorry Scheme in 2014. This will introduce a pan-London Traffic Regulation Order, requiring all lorries driving in the Capital to have appropriate side guards and extended view mirrors (class V and class VI).

A number of measures are proposed in this action plan to address this problem, for example see actions 8, 15 and 22 in Chapter 4.

3.3 In-depth analysis of police cyclist fatality investigations

In 2013, TfL commissioned in-depth research into all cyclist fatalities in London between 2007 and 2011. This aimed to update similar analysis published in 2010¹⁶, to improve understanding of the factors leading to all collisions resulting in a cyclist fatality. This research analysed the key risk factors that contributed to the 53 collisions studied and identified a set of countermeasures to improve cyclist safety.

The effectiveness of these countermeasures were then evaluated by reviewing available evidence on their effectiveness. The availability of robust effectiveness studies was found to be limited, partly owing to the lack of exposure data and partly due to the difficulties in evaluating some types of measures.



¹⁶ Pedal Cycle Fatalities Research, 2007-2011, University of Loughborough & UCL (2014)

Vehicle involved: key findings

Of the collisions studied, 25 (47 per cent of the total sample) involved an HGV. Most collisions involving an HGV (80 per cent) occurred at the front and nearside front (cab area). In these instances, two scenarios were common:

- The cyclist was hit by the front or nearside front area of the cab and immediately run over by the front wheels
- The cyclist was knocked to the ground, went under the HGV and then was run over by the rear wheels (rigid) or trailer wheels (articulated)

Where the cyclist fell to the ground between the front and rear wheels and was run over by the rear wheels, only one HGV (out of four in the sample) had side guards fitted. The areas of initial contact made between the cyclists and HGVs is illustrated in Figure 5. All of the collisions investigated in the study that involved HGVs and most of those involving other large vehicles (such as buses), resulted in the rider being run over by one or more of the vehicle's wheels. It was this impact, rather than the initial contact with the vehicle, that inflicted the life-threatening injuries. A number of measures are proposed in this action plan to address this problem, for example see actions 11 and 13 in Chapter 4.

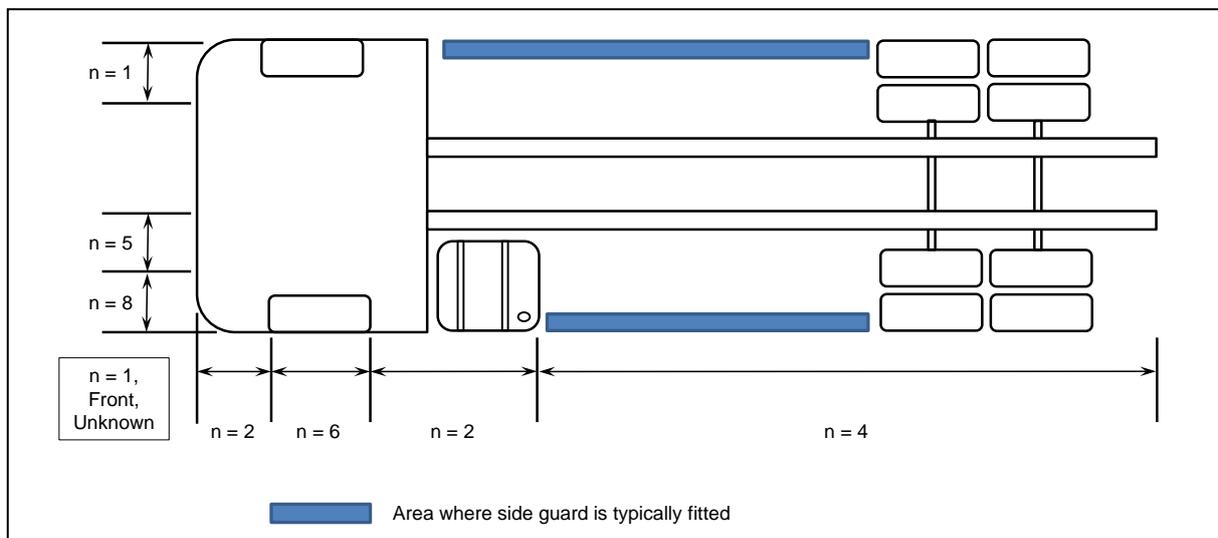


Figure 5: First contact point between HGV and cycle

Fifteen (28 per cent of the total sample) of the fatal cyclist collisions investigated involved cars. There have been many recent developments in car safety technologies which have the potential to prevent collisions or mitigate injuries. These, however, have mainly focused on collisions with pedestrians. In Europe, the car safety levels are determined by either regulation or the EuroNCAP consumer test protocols. Both include a series of tests intended to ensure that the front sections of cars do not cause serious injuries to pedestrians. The current regulatory and

EuroNCAP tests do not specifically address cyclist safety. Action 13 in Chapter 4 is proposed in this action plan to address this problem.

Fourteen of the collisions in the sample (26 per cent) occurred in darkness or partial light and in half of these collisions the cyclist did not have lights. While collisions are usually the result of many factors coming together at that specific moment, bicycle lights do improve safety and are a mandatory requirement, so this lack of compliance needs to be addressed. A number of measures are proposed in this action plan to address this problem, for example see action 12 in Chapter 4.

The findings of the report have been drawn upon in the risk analysis of cyclist safety and have been valuable in providing a better understanding of fatal collisions involving cyclists. There were 16 key recommendations arising from this research which are incorporated within the actions in this plan; the research report will be published alongside the final CSAP.

3.4 Cyclist and driver behaviour

London's roads can be a challenging and competitive environment. The growing number of road users and changing nature of traffic (more cyclists, more buses and other large vehicles) impacts on the experience of cycling.

Contributory factors

The most common contributory factors attributed to the cyclist as recorded by police attending fatal or serious cyclist casualty collisions during 2013, were: 'failed to look properly', 'failed to judge other person's path or speed' and 'careless/reckless/in a hurry'. The most common contributory factors attributed to the other vehicles involved are 'failed to look properly', 'careless/reckless/in a hurry' and 'poor turn or manoeuvre'.

As all the vehicles involved have been assigned similar contributory factors, it is not possible to draw any conclusions from this data, other than that all road users need to take more care and look out for each other.

Sharing the road

Research shows that while Londoners are concerned by safety on the roads, they tend to consider the need for change to lie with others, rather than themselves. This is a fundamental barrier to improving safety. Even though many people acknowledge that they take risks at times, they feel they have appropriately accounted for the safety of themselves and others and that any risks they take are calculated and 'safe'.



Drivers and cyclists: skills and experience

Cyclist behaviour is learned through experience of cycling, formal training and from observing the behaviour of other cyclists. Cycling makes large demands on a cyclist's skills, requiring constant consideration of their actions along a journey. This is why, for those who are new to cycling, as with learner drivers, it takes time to build up the skills required on busy urban roads. While evidence shows that as drivers drive more, their skills and safety increase, there is as yet no evidence to determine what experience is needed for cyclists to achieve a similar skill level¹⁷.

Training and skill-building is not just for cyclists. When performing manoeuvres drivers make decisions based on their assumptions and expectations of other road users. Therefore, more knowledge of how cyclists ride will influence driving behaviour (for example, drivers may allow extra space for cyclists on a road with potholes, having recognised that cyclists may need to avoid them). Training and informing all road users about how their behaviour impacts on others is vital to achieving safe streets in London. A number of measures are proposed in this action plan to address cyclist and driver behaviour, for example see action 27 in Chapter 4.

3.5 Enforcement, policing and the criminal justice system

TfL is working with the Metropolitan Police Service (MPS), the City of London Police and other enforcement partners to tackle anti-social and illegal road-user behaviour.

¹⁷ From bicycle crashes to measures, SWOV Institute for Road Safety Research (2013)

Operation Safeway

At the end of November 2013, the MPS launched Operation Safeway to help curb dangerous and illegal road user behaviour on London's roads. The seven-week operation involved 2,500 MPS officers and focused on 170 key junctions across the Capital during rush hour. Officers targeted behaviour that creates risk and danger on



London's roads, enforced the rules of the road and provided safety advice. Of the 4,200 fixed penalty notices and 20 summonses issued to cyclists, the largest volume (1,600) was owing to no lights being present on the cycle. Of the 10,100 fixed penalty notices issued to motorists, the largest volume (2,600) was for using a phone while driving. Further to this initial seven-week operation, Operation Safeway is now carried out on a regular basis.

Industrial HGV Task Force

The Industrial HGV Task Force is a joint initiative funded by TfL and the Department for Transport (DfT) that aims to crack down on non-compliant HGV operators and drivers in the Capital that create risk and danger on London's roads. It is formed of officers from the MPS, City of London Police and Driver and Vehicle Standards Agency (DVSA). Since its launch in October 2013, the partnership has successfully targeted the most dangerous vehicles from the construction and waste sector, helping to improve the safety of everyone using London's roads.

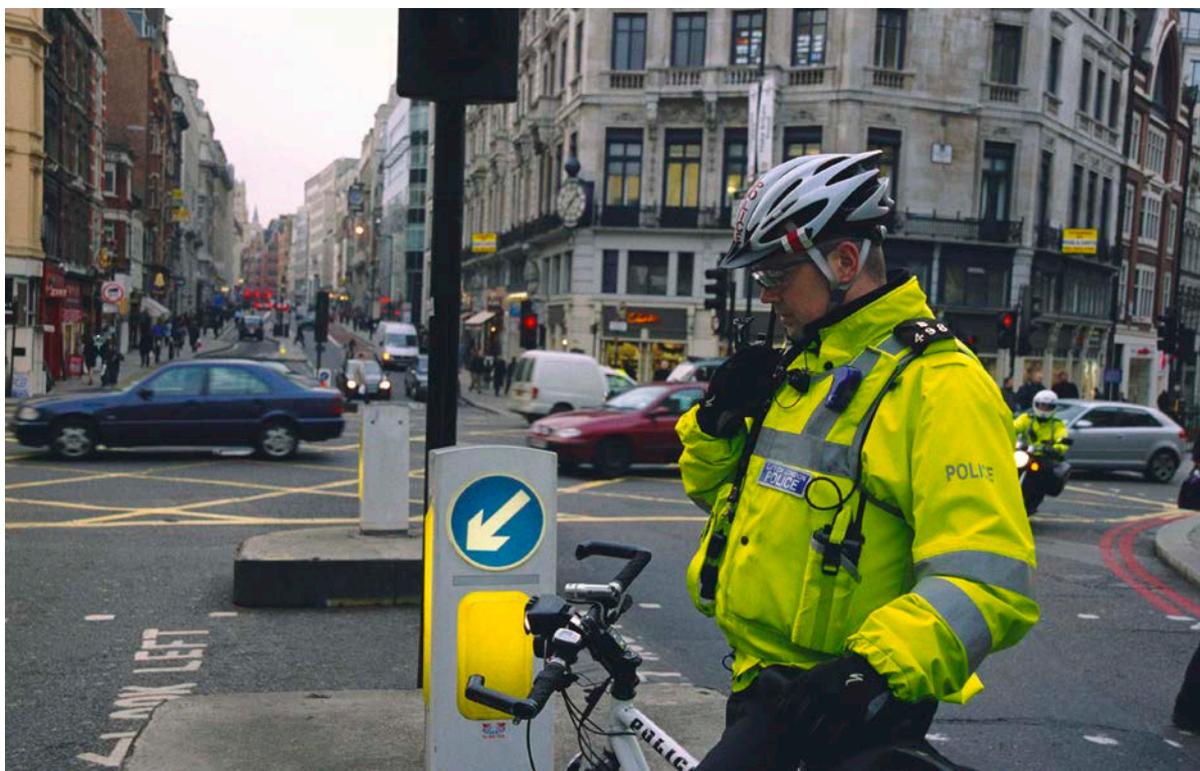
Since the start of operation, this intelligence-led enforcement has seen more than 2,200 vehicles targeted and stopped and has issued over 1,000 roadworthiness prohibitions (PG9s) and more than 600 Fixed Penalty Notices (FPNs). It fast tracks cases to public inquiry with the Traffic Commissioner, resulting in operators losing their licence, or having their operations suspended or curtailed. Results from the task force¹⁸ are publicised in the mainstream and commercial vehicle press to act as a deterrent against non-compliant companies that attempt to undercut those operating legitimately.

Cycle Safety Team

The MPS Cycle Safety Team was previously part of the Cycle Task Force, formed in 2010. It targets enforcement against careless and dangerous road user behaviour, with the aim of improving cycle safety.

¹⁸ Industrial HGV Task Force: Review of first six months of operations, October 2013-March 2014, TfL (2014)

Education is a key aim of the Cycle Safety Team, which delivers Exchanging Places events (see page 27). However, the team is also involved in enforcement of appropriate road user behaviour.



Cyclists and the criminal justice system

In 2013, TfL published research on cyclist KSI collisions and the London criminal justice system¹⁹. The purpose of this study was to review policies and processes concerning the management and handling of criminal cases in the Capital involving a cyclist fatality or serious injury (including reviewing collision investigation and prosecution case files from 2007 to 2009). It also aimed to identify changes and improvements already made and opportunities to further strengthen criminal justice arrangements.

Key findings included that the MPS should improve the collection of victim statements and that the Crown Prosecution Service should analyse the outcomes of all fatal road traffic cases to identify learning points and disseminate lessons.

3.6 Summary

This chapter has set out the broad understanding of why cyclist casualties occur in London. The challenges for serious injury collisions and fatal cyclist collisions are different and both must be addressed to reduce the number and severity of collisions and the risk of collisions occurring.

¹⁹ Cyclists and CJS (2007-2009), TfL (2013)

Understanding these challenges has enabled TfL to identify actions that address the specific issues. These are outlined in Section 4.2 on page 29.

4. Actions to reduce cyclist injuries in London

4.1 Recent progress

The first CSAP was published in 2010. It set out 52 actions, of which 44 have been fully delivered, while many have been incorporated into TfL's programme, and are now business as usual. The remaining actions have a longer delivery timescale than the three years of the previous plan, so have been added to this new plan.

The completed actions cover a broad range of activities from new infrastructure to working with the freight industry. There are some notable successes achieved through the previous CSAP that have made cycling safer in London.

Exchanging Places

The MPS Cycle Safety Team and City of London Police deliver Exchanging Places events which alert cyclists to the limited visibility from a lorry cab. Participants sit in the lorry cab and watch for a cyclist riding up the left side of the vehicle. This first-hand experience is an effective way of demonstrating the limited visibility, while giving cyclists the skills to keep them safe.



Through the coordination, resourcing and emphasis provided by the CSAP, the number of participants has grown year on year. Since 2007, more than 13,500 people have participated in these events.

Regulatory asks

Some of what TfL is seeking to achieve for cycle safety involves national and European regulatory and legislative change. TfL is working with the freight industry to influence European legislation on driver safety, HGV design and improvements to visibility from HGV cabs, including retro-fitting extra mirrors to older vehicles.

The DfT continues to support TfL in enabling new road designs for cyclists, including low-level traffic signals and junctions to help cyclists turn right on multi-lane roads.

Cycle Safety Tips campaign

In 2013, TfL developed a campaign that aimed to increase drivers' and cyclists' understanding of key safety messages. The message emphasis is communicating a range of safety tips to both cyclist and driver audiences to improve understanding of the perspective and issues faced by other road users (see Figure 6 on page 28).



Figure 6: Examples from the Cycle Safety Tips Campaign

The campaign has achieved extensive reach on roadside posters across London, with proximity to KSI hotspot locations and high cycle use areas. Many of the tips have been adopted by the DfT for use in their national Think! campaign.

Working in partnership

TfL has worked with the freight industry to develop work-related road risk clauses for procurement contracts with suppliers. All of TfL’s procurement contracts now contain the clauses and TfL is working with other public and private bodies, including the construction industry, to encourage them to do the same. TfL has also worked with industry to develop the ‘standard for construction logistics’, which encourages wider adoption of best practice across the construction logistics industry.

The wider programme

TfL has also delivered a broad range of activities, including building upon the infrastructure and technology trials at the Transport Research Laboratory (TRL) with low-level signals for cyclists (now being trialled at Bow Roundabout), the introduction of new infrastructure such as the Cycle Superhighways (including the first fully segregated section at Stratford High Street). TfL has also worked with the freight industry to change the way drivers think about cyclists and sharing the road with vulnerable road users – such as through innovative new driver training programmes – and lobbying the DfT for changes to the Driver Certificate of Professional Competence, to include a mandatory road safety module.

4.2 Key themes for cycle safety activity to deliver safe cycling for all

The actions in this plan build on these successes and have been tailored to meet the specific needs and challenges for cyclist safety. The programme will run until 2020, with some actions being completed in the short to medium term and others taking longer to realise the full benefits. Innovation is also vital to improving road safety in London and TfL will seek out emerging technologies that will be ready for wider use in future.

The actions are grouped by areas to address the collision factors and trends identified in this plan. They are:

- Designing safe streets for cycling
- Safe vehicles on our streets
- Improving driver standards and awareness of cycling
- Enforcement and delivery of safe cycling through the criminal justice system
- Greater communication, skills and training for cyclists
- Building knowledge and promoting safe cycling for all

Finally, this chapter sets out the further analysis and research needed to generate insight into the causes of cyclist KSIs and how they can be prevented.

This section sets out actions to improve the infrastructure of London's streets to make them places where Londoners feel safe cycling.

Designing safe streets for cycling		
No.	Description	Complete by
1	<p>Together with London boroughs, TfL will deliver the major infrastructure programmes of the Mayor's Vision for Cycling in London²⁰ emphasising the importance of cycle safety on the TLRN and borough roads. This includes implementing:</p> <ul style="list-style-type: none"> • At least 50 per cent of the Central London Grid by 2016 and Quietways, achieving a safe and connected network for cycling • Upgrading the existing Cycle Superhighway routes by 2016 and delivering new Cycle Superhighways • Three mini-Holland schemes in the London Boroughs of Enfield and Waltham Forest, and Royal Borough of Kingston upon Thames • 33 Better Junctions to create a step-change in cycle and pedestrian safety at key junctions. Ten schemes will be delivered by 2016 	<p>2016</p> <p>2016</p> <p>2018</p> <p>2020</p>
2	TfL will publish the final version of the London Cycling Design Standards (LCDS) to promote world class cycle designs, require the application of the standards on the TLRN and encourage its use in all Local Implementation Plan (LIP) funded schemes on borough roads.	On-going from 2014
3	TfL will support and encourage best practice application of the LCDS on the TLRN and borough roads by offering continued professional development training for TfL and borough engineers, scheme designers and auditors.	On-going from 2014
4	TfL will focus its road safety engineering programme at locations on the TLRN where conditions for vulnerable road users can be made safer . London boroughs will be strongly encouraged to prioritise pedestrian and cycle safety through the three-yearly LIP programmes; borough road safety plans; by publishing annual borough hotspot maps; and considering locations where bikeability can be improved.	2016 & 2019
5	TfL and the City of London will trial 20mph speed limits on two stretches of the TLRN in the City of London, including London Bridge and Blackfriars Bridge, to create safer and more attractive environments for cycling. The trials will be closely monitored to help understand the potential of 20mph limits at other locations on the TLRN. TfL will also continue to	<p>2016</p> <p>Trial starts 2014</p>

²⁰ The TfL budget 2014/15 provides more delivery information

	support London boroughs looking to deliver more 20mph schemes through their LIP programmes and to encourage alignment of 20mph schemes with appropriate RTF street types.	
6	TfL will improve the comfort and safety of popular cycling routes on the TLRN by inspecting them more often and maintaining them to higher standards.	2015 and on-going to 2020
7	TfL will publish planned and emergency diversion routes which take cyclists along the safest and most direct routes when usual routes are unavailable, and will seek to keep routes open for cyclists unless space constraints or safety are compromised.	2015

The following actions set out activities designed to ensure the vehicles and drivers using London's streets are safe. Many are aimed at large vehicles and fleet industries.

Safe vehicles on our streets		
No.	Description	Complete by
8	TfL will work with London Councils and London boroughs to deliver the Mayor's proposed Safer Lorry Scheme , to ensure HGVs driving in London have side guards and extended view mirrors fitted, to help better protect cyclists and pedestrians.	2015
9	TfL will work with bus manufacturers and operators to trial vehicle technologies to improve the safety of cyclists by: <ul style="list-style-type: none"> • Trialling innovative vehicle technology to identify the potential benefits to cyclist safety of radar and optical sensors on London buses • Trialling Intelligent Speed Assistance (ISA) technology on London's buses. ISA technology can prohibit a vehicle travelling above the designated speed limit • Exploring how improvements to bus design could protect cyclists, drawing on international best practice 	On-going to 2020 2015 2015 2016
10	TfL will work with the freight, fleet and construction logistics industries to target an improvement in vehicle and driver safety standards by: <ul style="list-style-type: none"> • Holding supplier seminars to stimulate the development of innovative vehicle safety technology • Encouraging and supporting small fleet operators to become accredited with the Fleet Operator Recognition Scheme (FORS) • Establishing a robust and consistent process for independently evaluating the effectiveness of vehicle safety technology for HGVs. TfL will encourage HGV operators to fit equipment that has been subject to such evaluation • Encouraging the uptake and retrofit of effective vehicle safety technology on all existing lorries • Increasing the uptake of FORS, particularly in the Greater London Authority (GLA) family, London boroughs, the wider public sector and their suppliers and consider contractually requiring FORS membership through the procurement process 	On-going to 2020 2014 2015 2015 2015 2015
11	Together with partners, TfL will improve the safety of cyclists around lorries by: <ul style="list-style-type: none"> • Trialling quiet vehicle technology to expand off-peak delivery, separating cycles from lorries in rush hour 	On-going to 2020 2014

	<ul style="list-style-type: none"> Working with industry to develop new front under run protection for the first time 	2016
	<ul style="list-style-type: none"> Working with operators to develop and test better designs for side guards 	2016
12	<p>TfL will work with manufacturers and cycle businesses to help cyclists be safe by:</p> <ul style="list-style-type: none"> Offering advice on accessing training and cycling safely when buying a cycle Challenging cycle manufacturers, through innovator seminars, to increase the conspicuity of bicycles, by for example, building into the frame, lights and retro-reflective equipment or irremovable bells 	2015 2017
13	<p>TfL will lobby vehicle manufacturers and representative organisations to make vehicles safer for cyclists by pushing for:</p> <ul style="list-style-type: none"> Autonomous Emergency Braking Systems to be fitted to all new cars as standard Research into the potential of a Rapid Emergency Impact Braking System (RIBS) to rapidly stop HGVs if they hit a cyclist, to prevent fatal crushing injuries A specific new European New Car Assessment Programme (EuroNCAP) safety rating for cars' impact protection of cyclists and for EuroNCAP to extend its star score ratings to include buses and HGVs for non-occupant safety 	On-going to 2020
14	<p>TfL will lobby:</p> <ul style="list-style-type: none"> The DfT to improve lorry and driver safety by regulatory change, requiring improved vehicle design that considers the safety impact of the vehicle The European Commission to ensure that commercial vehicles are designed to give the driver maximum direct visibility around their vehicle 	On-going to 2020

These next actions seek to improve driver standards and drivers' awareness of cycling so that drivers themselves become more skilled, safe and familiar with cycling.

Improving driver standards and awareness of cycling		
No.	Description	Complete by
15	<p>TfL will work with the freight, fleet and construction logistics industries and the Government's Health and Safety Executive to improve driver safety standards for cyclists by:</p> <ul style="list-style-type: none"> Working to extend the rigour of on-site Health and Safety requirements to off-site trips Investigating methods for data collection and analysis of higher risk locations for lorries and cyclists to help inform driver safety briefings and risk mapping Putting 10,000 drivers through safety training (such as the Safe Urban Driving course) by 2017 and measuring driver attitude and behaviour changes after the course 	On-going to 2020
		2016
		2016
		2017/2020
16	<p>TfL will extend the safety principles of FORS by developing cycle safety initiatives for other operator sectors such as buses, coaches, tour buses, taxis, private hire vehicles, light goods vehicles, cycle couriers and cyclists generally, encouraging drivers to be more sympathetic to vulnerable road user needs by:</p> <ul style="list-style-type: none"> Sharing key cycle safety messages with taxi and private hire trade papers and including them in TfL licensee updates Working with the taxi and private hire industry to ensure all Taxicard and Capital Call scheme drivers have undertaken vulnerable road user driver awareness training Providing the taxi and private hire trades with key collision hotspot locations to help inform taxi drivers of high risk areas Extending and adapting the Safe Urban Driving training into the coach, taxi and private hire industries. Options to further introduce this or other relevant training, for example, to all newly licensed taxi and private hire drivers, will be investigated along with training in other relevant areas (eg customer service) 	On-going to 2020
		2015
		2016
		2016
2017		
17	<p>Working with the Driver & Vehicle Standards Agency (DVSA) to:</p> <ul style="list-style-type: none"> Further emphasise cycle safety in the hazard perception part of the driver theory test and incorporate more awareness of cyclists in the practical driving test 	2017

	<ul style="list-style-type: none"> Working with the DVSA to require taxi/private hire and general driving instructors to attend vulnerable road user awareness training and creating a requirement for vulnerable road user awareness to be incorporated within the London taxi and private hire driving test for potential taxi/private hire drivers 	
18	TfL will work with bus operators to improve awareness of cycle safety through driver training and recruitment by developing a training module on vulnerable road users for incorporation into Driver CPC training so that every bus driver participates in this refreshed training by 2016.	2016
19	TfL will raise awareness among bus operators and drivers of high cyclist risk locations by: <ul style="list-style-type: none"> Using bus Incident Reporting & Information System (IRIS) data and police STATS19 data to build a comprehensive picture of higher risk locations for cyclists across the bus network. This will help inform driver safety briefings and risk mapping on a route by route basis which will be communicated to drivers through operator briefings, driver training, mess room posters, notices and videos Undertaking further analysis of the common conflict types between buses and cyclists to inform training materials and safety messages for drivers 	2015 2015
20	TfL will lobby the DfT to: <ul style="list-style-type: none"> Raise awareness of cycling and the safety of cyclists and other vulnerable road users by identifying improvements in the Highway Code and better aligning it with advice from National Standards (Bikeability) training Improve lorry driver safety through embedding safety in the driver Certificate of Professional Competence 	On-going to 2017

Enforcement by the police and other agencies is crucial to making London's streets safer for cycling. These actions also emphasise the importance of the criminal justice system in delivering safe cycling.

Enforcement and delivery of safe cycling through the criminal justice system		
No.	Description	Complete by
21	TfL will work with London's police and the DVSA to increase enforcement of driver and rider behaviour and vehicle safety by:	On-going to 2020
	• Tasking the Industrial HGV Task Force and Commercial Vehicle Unit to take direct action against dangerous drivers, vehicles and operators	2014
	• Encouraging police to trial waiving cyclists' first offence Fixed Penalty Notices (FPNs) on condition of attendance at an Exchanging Places/training hub event	2015
	• Providing intelligence about where cyclists face high levels of risk to support the Cycle Safety Team's corridor enforcement programmes and wider regular police enforcement campaigns at key junctions	2015
	• Supporting the use of alternatives to financial penalties, such as National Driver Offender Retraining Scheme (NDORS) courses (eg Capital Cycle Safe)	2016
22	In partnership with the MPS and City of London Police, TfL will double the number of Exchanging Places events aimed at cyclists to 100 per year and prioritise attracting those who face higher-risk, especially those who may not feel at risk, to all these events by:	On-going to 2020
	• Delivering at least one event per month with London Buses	2015
	• Holding Exchanging Places events alongside commercial vehicle enforcement to promote a balanced approach to enforcement and road user safety	2015
	• Running pop-up Exchanging Places and cycle safety events	2016
	• Investigating introducing events at schools and workplaces	2016
	• Considering conducting a touring event of major town centres across London	2016
23	TfL will work with the London criminal justice system (the police and the courts) , to:	On-going to 2020
	• Improve understanding and transparency of enforcement action and the criminal justice response to prevent KSIs	
	• Support targeted training to ensure best practice in STATS19 data collection	
	• Write to Coroners to ensure optimal use is made of reports	

by Coroners which highlight solutions that might prevent deaths and recurrent causes of death

- Working with the Crown Prosecution Service and Courts to encourage greater understanding of cyclists' road traffic incidents and encouraging consistent and appropriate use of disposal outcomes such as driving bans

These actions aim to equip cyclists with the information and skills they need to cycle safely on London's streets and develop better ways of communicating with many different types of cyclist.

Greater communication, skills and training for cyclists		
No.	Description	Complete by
24	TfL will launch a dedicated London Virtual Skills Hub. This will provide an online booking facility for cycle training and access to more information on advanced cycle safety skills. The hub will enable booking for cycle safety seminars for workplaces, pop-up locations including bookable time-slots. The aim for these seminars will be to attract commuter cyclists and provide advanced cycle skills courses (eg advanced commuter skills with bicycle repair and maintenance), taking advantage of partnership and sponsorship opportunities.	2015
25	Together with London boroughs, TfL will double the number of adult cyclists receiving advanced safety skills training by: <ul style="list-style-type: none"> • Developing London-specific training with key safety messages offered at Level 2 National Standards • Piloting re-packaged and diversified adult cycle training so that 25 per cent of all adults who undertake cycle training achieve Level 3 National Standards by 2020 • Working with communities that face higher risk on London's roads (particularly BAME and those in areas of higher levels of deprivation) to encourage effective training delivery 	On-going to 2020 2016 2016/2020 2017
26	Together with London boroughs, TfL will increase the number of children receiving cycle training and the level of skill among child cyclists , by: <ul style="list-style-type: none"> • Offering all pupils in London cycle training to a minimum of Level 2 National Standards (Bikeability) and to Level 3 National Standards (Bikeability) wherever possible • Improving cycling skills so that 75 per cent of training undertaken by primary school children by 2020 is at a minimum of Level 2 National Standards (Bikeability) • Piloting targeted training for teenagers aged 15-16 years to support independent active travel, and improve their skill-level so that 75 per cent of training undertaken by secondary school-aged children is to Level 3 by 2020 	On-going to 2020 2014 2020 2016/2020
27	TfL will develop and launch campaigns to change behaviour among all road users to make cycling safer by increasing awareness by all road users of the importance of sharing roadspace, and:	On-going to 2020

	<ul style="list-style-type: none"> • Further developing the cycle safety tips campaign to ensure effective targeting of key messages 	2014
	<ul style="list-style-type: none"> • Providing clarity to cyclists and drivers on the use of existing and new cycling infrastructure through press releases and pop-up events when appropriate 	2015
	<ul style="list-style-type: none"> • Creating opportunities to raise awareness of cycle safety through all forms of media 	2015
28	<p>The London boroughs and TfL will work with cycle training providers to increase the uptake and effectiveness of cycle training, equipping cyclists with the skills to travel safely by:</p> <ul style="list-style-type: none"> • Ensuring that key Highway Code and safety messages are adopted at Level 2 National Standards (Bikeability) • Through procurement, support more effective delivery of cycle training, for example, to achieve more Level 3 National Standards training for secondary school aged-children and adults 	<p>2015</p> <p>2016</p>

Although TfL is taking the lead to make roads safer, TfL cannot single-handedly achieve safe cycling for all. Ninety-five per cent of the Capital's streets are the responsibility of London's boroughs, making them essential to the success of this plan. There are many other partners involved which TfL relies on to realise our shared ambition for a safer city for cycling.

Building knowledge and promoting safe cycling for all

No.	Description	Complete by
29	<p>Together with the Cycle Safety Working Group, TfL will coordinate delivery of this plan, by:</p> <ul style="list-style-type: none"> • Working intensively with freight operators and industry to improve freight and fleet safety • Working with the police to learn lessons from cyclist KSI collisions at high priority junctions • Drawing on intelligence and insight from cycle safety stakeholders and the police to deliver targeted site-specific enforcement, and engaging with road users to deliver cycle safety messages • Working with London Councils to offer tailored training for borough officers, to enhance and improve road safety resources and skills within each borough 	On-going to 2020
30	<p>TfL will work with the MPS and City of London Police to target education and enforcement to improve the safety of cyclists and other vulnerable road users through:</p> <ul style="list-style-type: none"> • Increasing the number of police officers in the Cycle Safety Team from 39 to 50 • Supporting and improving the Roadsafelondon online intelligence-gathering tool • Working in partnership with the MPS and City of London Police to better support and inform activities in local policing teams for road safety. This includes deploying the borough Safer Transport Teams to support activities such as education for all road users at key junctions, Exchanging Places, road safety advice in schools and on-street enforcement and investigation 	<p>On-going to 2020</p> <p>2015</p> <p>2016</p> <p>2017</p>
31	<p>TfL will revolutionise the levels of knowledge about cycle safety in the Capital working with London boroughs to:</p> <ul style="list-style-type: none"> • Create new links with London hospitals to improve serious injury data collection, encourage increased collision reporting and promote post-collision cycle training confidence sessions • Systematically collect and monitor the levels of cycling with London boroughs 	<p>2015</p> <p>2016</p>

	<ul style="list-style-type: none"> Evaluate the effectiveness of activities to improve cycle safety for all 	2016
32	<p>To deliver its commitment to improve the perception of cycling and cycle safety among both cyclists and non-cyclists, TfL's programme will be integrated with public health objectives by:</p> <ul style="list-style-type: none"> Supporting borough transport teams in coordinating road safety programmes with their Public Health colleagues to increase cycling and walking Encouraging use of the WHO HEAT tool through training and best practice guidance to support business case development for initiatives that will deliver more and safer cycling Working with the media to promote cycle safety 	<p>On-going to 2020</p> <p>2015</p> <p>2015</p> <p>2015</p>
33	TfL will continue to build an evidence base by undertaking further research to understand and improve its knowledge of cycle safety . See Section 4.3 below.	On-going to 2020

4.3 Further research

Despite the extensive evidence discussed in this section of the report, there are still gaps in our knowledge. This plan sets out our further research plans.

Cyclist fatalities

The key additional research suggested in the recommendations of the cyclist fatalities in London (2007-2011) report will be undertaken.

Serious injury collisions

TfL will commission research to use Hospital Episode Statistics to better understand the nature of injury and the potential to countermeasure cyclist injury collisions.

Cyclists and their bicycles

A segmentation of the cyclist market will be conducted to better understand the different types of cyclists in relation to risk-taking and safety behaviours.

Other vehicles and their drivers

TfL will match the Vehicle Registration Mark database with STATS19 to learn more about vehicles involved in cycle collisions. A segmentation of the light goods vehicle drivers market is required to improve design of training and campaign materials and the routes by which the sector is targeted.

The law

TfL will seek to understand how all road users are processed by the Criminal Justice System. This will include comparisons between road users and benchmarking London against other UK cities.

Infrastructure

The outcomes of the TRL trials of new infrastructure will be published, and TfL will continue monitoring and evaluating on-street infrastructure trials and new interventions. An international best practice study of cycling infrastructure will also be published.

Casualty trends and risk

With new groups of people taking up cycling, casualty trends and levels of risk for cyclists may change. TfL will therefore expand risk-based analysis to assess future scenarios and understand potential risk inequalities based on gender, ethnicity, geography and deprivation.

TfL will also seek to strengthen the information collected about cycling exposure, such as how far cyclists are travelling or for how long they cycled for. This data needs to be collected on all roads, not just the TLRN, which is why TfL will be working with London boroughs to collect more robust data.

4.4 Summary

This plan describes a programme of activity to make cycling safer, using insight from a wide variety of sources to pinpoint when, where and why cycle collisions happen, and what can be done to make cycling safer.

TfL has used extensive data analysis to generate insight, to better understand the risk cyclists face, and how collisions occur, but recognises that there is still much to learn to ensure safety improvements are made in the future.

Through positive engagement and collaboration with stakeholders, this plan reflects the views and expertise of partners committed to improving road safety for all on London's roads.

5. Monitoring outcomes

TfL will work with the Cycle Safety Working Group to deliver this action plan over the lifetime of the Safe Streets for London road safety plan. The Cycle Safety Working Group will meet regularly to monitor progress on the key outcomes and identify priority areas of action.

To ensure the challenge and progress is properly understood, TfL will conduct regular analysis of casualty and cycling trends, benchmark casualty rates against national and international cities and conduct statistical analysis to support and where possible, determine the effectiveness of actions contained within this plan.

TfL publishes regular collision and casualty data and will report on progress of the target for a 40 per cent reduction in KSI casualties by 2020. TfL will also continue to publish research reports and information to strengthen the evidence base for all vulnerable road user groups.