

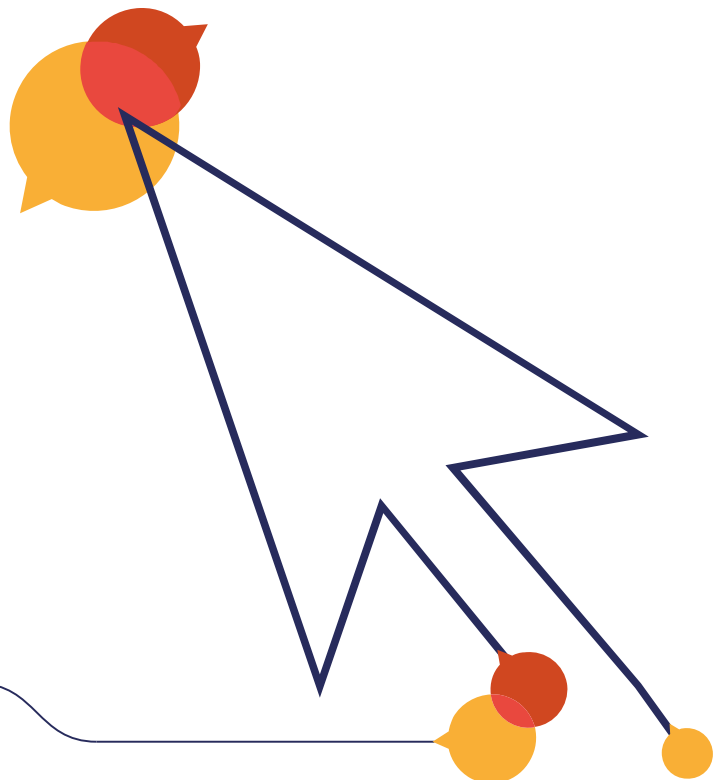


accidents don't have to happen

# RoSPA Pedestrian Safety Policy Paper



Pedestrian Safety



Date: August 2018

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## Executive Summary

Walking is an excellent way to get about and provides a wide range of health and environmental benefits. Unfortunately, it also carries a certain amount of risk, and so we need to ensure that more walking does not lead to more pedestrian casualties.

The key is to create a safe walking environment, improve driver, cyclist and pedestrian attitudes and behaviour towards each other, and to produce safer vehicles that reduce the risk to vulnerable road users such as pedestrians and cyclists.

The policy paper has two objectives:

1. To review and summarise information on the benefits and risks of walking in Great Britain.
2. To identify the best ways of meeting the challenge of increasing walking without also increasing pedestrian casualties. Based on current evidence we have identified key actions, which we would recommend be undertaken to achieve this. These can be found on page 37.

According to the National Travel Survey, on average, individuals made 243 walking trips in 2016 in England. This was 25% of trips made, but just 3% of distance travelled. Walking trips have fallen by 17% since 2002 and the distance walked by 19%,<sup>1</sup>. In the year ending November 2016, the Active Lives Survey indicated that 68% of adults in England made at least one walking trip week of at least 10 minutes<sup>2</sup>.

In Scotland, around one quarter (24%) of people reported walking as their main mode of travel in 2016, which was an increase on the 2015 figure. Just over one in ten (12%) of adults usually walked to work and half (52%) of children usually walked to school as their main mode of transport<sup>3</sup>.

In Wales, almost two-thirds (61%) of adults walked for at least five minutes once or twice a week and almost half (47%) walked at least three times a week in 2016/7.<sup>4</sup>

### Benefits of walking

There are many benefits for individuals of regular walking, including:

- Reducing the risk of dying prematurely, especially from heart disease
- Reducing the risk of stroke
- Reducing the risk of developing high blood pressure
- Reducing the risk of developing colon and breast cancer
- Helping to control weight
- Helping older adults to become stronger and maintain their mobility
- Promoting psychological wellbeing
- Saving money by cutting down on fuel, parking and public transport costs.



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There are also a number of benefits at an environmental level, including:

- Easing congestion
- Reducing noise pollution, and
- cutting exhaust emissions

### Risks of walking

Every year in Britain, around 23,000 pedestrians are killed or injured in police reported road accidents, including over 5,000 who are killed or seriously injured. Some groups are particularly vulnerable, such as children and young people from the most deprived backgrounds and older people.

Along with the risk of injury, air pollution affects pedestrians, contributing to around 40,000 early deaths per year. If more walking and cycling is achieved by reducing motorised road journeys it could reduce air pollution.

### A safer walking environment

Busy urban roads, junctions and high-speed roads without adequate consideration of pedestrian facilities increase the likelihood that pedestrians will be injured or killed while walking alongside or crossing the road.<sup>5</sup> Two general approaches create a safer physical environment for pedestrians:

- Introducing a 'safe system' approach to road design that reduces the risk of crashes occurring, and the severity of any that do occur, making fatal injuries unlikely
- Reducing motor traffic volume

### Reducing vehicle speeds

One of the most effective ways of improving pedestrian safety is reducing vehicle speeds. Even at a relatively low impact speeds, pedestrians receive more severe injuries than many other road user groups because their only protection is often their clothes. Speed determines the severity of injuries because at lower speeds, drivers have more time to react and avoid collisions<sup>6</sup>. Several engineering measures can reduce vehicle speed and prevent pedestrian collisions. Measures include 20mph zones, limits, and traffic calming measures such as speed humps and chicanes, and safe crossings.

### Shared space

'Shared Space' schemes can also be introduced, in which the highway environment is re-designed to slow down traffic speed and give greater priority and safety to non-motorised users. It has considerable potential to provide a safer and more user-friendly environment, especially for pedestrians. However, following concerns raised by groups that represent people with impaired vision, the Department for Transport have recommended that local authorities pause the development of shared space schemes while they review and update guidance.<sup>7</sup>



## Pedestrians with special needs

Road design also needs to take the needs of those with disabilities into account. One-fifth (21%) of people in the UK have a disability<sup>8</sup> and so may be at more risk than their non-disabled counterparts. The walking environment should be made safer for disabled pedestrians by:

- Tactile paving at the edges of steps and pavements and safe crossing places.
- Well-maintained, firm, flat and wide footways making the roads easier to navigate and safer to use for those with disabilities.
- Avoiding unnecessary street 'clutter' such as advertising boards and bollards, particularly in the case of those who are visually impaired<sup>9</sup>.
- Tarmac, rather than paving stones, which reduces the risk of uneven surfaces and trips and falls, and makes the use of mobility scooters more comfortable and efficient<sup>10</sup>.
- Dropped kerbs to allow easier access for wheelchair users and;
- Safe crossings with signaling that can be detected by those with sight or hearing loss and longer crossing periods for people with mobility impairments to safely cross the road<sup>11</sup>.

## Street lighting

Night-time travel is one of the greatest risk factors for pedestrians and affects people's perceptions of safety. Many pedestrian collisions occur in the first hour of darkness.<sup>12</sup> Pedestrians often avoid unfamiliar streets, deserted public spaces and dark underpasses if they believe they are at risk of harm or assault in these locations. This means that they may choose to take a route or cross a road in a location with higher traffic risk. Street lighting promotes a sense of safety in urban areas and so increases the quality of life by artificially extending the hours in which it is light so that activity can take place.

## Vehicle technology

Developments in vehicle design and technology can improve pedestrian safety. Increasingly, vehicles are being designed to be safer for pedestrians by reducing the likelihood of collisions with them and reducing the severity of any collisions that do occur. Ultimately, this is likely to result in "driverless" cars, but in the meantime, cars will become more and more autonomous but still require a driver to be in control. These technologies are evolving rapidly as autonomous technology is developed and trialled. Some of the technology that is likely to offer protection to pedestrians include:

- Intelligent speed adaptation (ISA) to support drivers' compliance with the speed limit.
- Autonomous emergency braking (AEB) that uses sensors to detect the risk of hitting a pedestrian and braking the vehicle to prevent it
- Vulnerable road user detection and alert systems
- Lane departure warning systems
- Safer bonnet design to reduce the likely severity of injuries to any pedestrian who is hit.<sup>13</sup>



## Improving road user behaviour

Although infrastructure can improve the safety of all road users, most road crashes are at least partly caused by human error, which can range from simple mistakes and misjudgements to deliberately dangerous and illegal behaviour. Creating a safer pedestrian environment will also help to improve the behaviour of all road users, by making it easier for them to behave responsibly and safely.

Education (including training and publicity) and enforcement are also key approaches to improving road user behaviour, and to helping everyone share the road safely together. However, all road users, including pedestrians, cyclists and drivers, must also take responsibility for their own choices and behaviour.

### Improving Driver Behaviour

#### Enforcement

Unfortunately, many drivers exceed the speed limit, or drive within the limit, but too fast for the conditions. In 2016, 53% of car drivers and 56% of light commercial vehicles were observed exceeding the 30mph speed limit<sup>14</sup>. Therefore, compliance with the speed limit needs to be improved through enforcement and education measures. National Speed Awareness Courses are offered to drivers caught exceeding the speed limit, in place of penalty points and a fine. The course aims to identify the benefits of complying with speed limits, understand the consequences of speeding, improve knowledge of speed limits and recognise personal responsibility for choice of speed.

#### Driver Training

Once they have gained their full driving licence, few drivers take any further driver training, unless they are required to do so as part of a driver rectification scheme or their employer provides advanced training. There are many options available, ranging from quick and easy courses on specific issues or skills to longer courses leading to full advanced driving tests.

### Improving Pedestrian Behaviour

The most common contributory factors attributed to pedestrians are 'failed to look properly', 'careless, reckless or in a hurry' and 'failed to judge other persons path or speed.'<sup>15</sup> Other common factors are 'pedestrian crossing the road near a stationary or parked vehicle' (meaning another road user did not see them) or 'using a pedestrian crossing facility incorrectly'.

#### Pedestrian Training

Pedestrian casualties increase as children grow older and become more independent as pedestrians. Road safety education and training for children at Key Stages 1 and 2 should be conducted in real-road environments, not solely in a classroom or playground and should cover modern-day scenarios, such as distraction by mobile phones or MP3 players while walking, and crossing between parked vehicles. Road safety should also be taught as a spiral programme across all key stages in a way that ensures that what has been learnt is revisited, reinforced and extended in an age-appropriate way.<sup>16</sup>



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### Improving visibility

Pedestrians also need to be aware that other road users may not see them in low light conditions, particularly if they are wearing dark clothing. It is advised that pedestrians select light coloured clothing and add reflective material to backpacks, shoes and clothing to make themselves more visible to other road users<sup>17</sup>.

### Impairment

Pedestrians should also be aware of the impacts alcohol can have on their safety. In 2016, a pedestrian was killed or injured when impaired by alcohol in 1,349 accidents<sup>18</sup>. Alcohol consumption, whether on the part of the vehicle driver or a vulnerable road user such as a pedestrian increase the likelihood of a crash, the severity of injury and the odds of death<sup>19</sup>.

### Cyclists and Pedestrians

Although most cycling takes place in areas of high pedestrian activity, it is important to note that the vast majority of pedestrians who are killed or injured in reported collisions are hit by a motor vehicle rather than a cycle. A concern of pedestrians is cyclists who ride on the pavement. Pavement cycling is illegal, unless it is on a shared cycle/pedestrian path or shared space. It can be a barrier to walking and is particularly intimidating to vulnerable pedestrians<sup>20</sup>. This could be solved by more investment in cycling infrastructure, which could encourage fewer cyclists to ride on the pavement.



## Introduction

This policy paper has two main objectives:

1. To review and summarise information on the benefits and risks of walking in Great Britain.
2. To identify the best ways of meeting the challenge of increasing walking without also increasing pedestrian casualties.

Although this policy paper focuses on walking, many of the principles discussed also apply to cycling. Both are important and valuable forms of physical activity and transport, which should be accorded equal priority in terms of public policy. Many of the health benefits gained from walking can also be gained from cycling, and many of the measures to improve pedestrian safety (for example, speed management) improve cycling safety. However, they are two very different modes, and mixing them together inappropriately can cause anxiety, insecurity and even serious injury to both riders and pedestrians.

Policies and infrastructure to promote walking, and improve pedestrian safety, should not be made in isolation. Both pedestrians and cyclists are highly vulnerable to, and restricted by, motor traffic. It is important to aim to reduce the risk of collisions, to produce an environment that both pedestrians and cyclists feel safe using, and to improve driver behaviour.

The Government wants walking and cycling to be a normal part of everyday life and the natural choice for short journeys. However, the sad reality is that in 2016, 448 pedestrians were killed on our roads, 25% of all road fatalities, over 5,000 were seriously injured and almost 18,000 slightly injured in reported road accidents.<sup>21</sup> Pedestrian deaths were 10% higher, serious injuries 4% higher and slight injuries 4% lower than the previous year.

RoSPA believes that the ambition to significantly increase the amount of walking will only be achieved if people feel safe when walking, otherwise the huge numbers of people who would walk if they felt they could do so, are unlikely to be persuaded that it is actually safe and convenient enough for them. The key to increasing walking is to create a safe on and off-road environment, improve road user attitudes and behaviour towards each other, and safer vehicles that reduce the risk of collisions occurring and the severity of those that do occur.





## Levels of walking

### England

According to the National Travel Survey, on average, individuals made 243 walking trips in 2016. This accounted for 25% of trips made, but just 3% of distance travelled. Unfortunately, it is not possible to compare this data to previous years because the National Travel Survey data collection methods changed during 2016 to include short walks of less than one mile. However, excluding these short walks, walking trips had fallen 17% since 2002 and the distance walked had decreased by 19%, suggesting a considerable decline in walking<sup>22</sup>.

In the year ending November 2016, the Active Lives Survey indicated that 68% of adults in England made at least one walking trip a week (of at least 10 minutes)<sup>23</sup>. However, regular walking is not distributed equally across England. London has the highest proportion of adults walking at least once a week (72%) and the West Midlands has the lowest (64%). The local authority with the highest prevalence for walking once a week was the City of London (85%) followed by Hammersmith and Fulham (81%). Thirteen local authorities had less than 60% of their adult population walking less than once a week, with Sandwell having the lowest walking rate (56%)<sup>24</sup>.

There are a number of reasons that people choose to walk. The 2016 National Travel Survey indicated that the top five purposes for walking included 'just walking' (23%), education, including escorting children to a place of education (21%), shopping (19%), leisure (17%) and personal business (9%). Walking levels for men and women seem to be similar at all ages. However, women typically make more walking trips a year than men do (262 for women compared to 223 for men).

The proportion of people who walk for recreation (54%) is slightly lower than the proportion of people who walk for utility purposes (60%). There are clear age differences between walking purposes. For utility purposes, such as commuting, walking prevalence is highest amongst young adults and declines with age. However, walking for recreational purposes and enjoyment tends to increase with age up to the 55-64 age group before declining afterwards<sup>25</sup>.

In England, the amount of children walking to school has declined considerably. In the 1970's around 70% of children walked to school. However, by 2016, only just over half (53%) of primary school children walked to school and one-third (37%) of secondary school children. For all children, aged 5-16, the figure was just under half (46%)<sup>26</sup>.

### Scotland

In Scotland, around one quarter (24%) of people reported walking as their main mode of travel in 2016, which was an increase on the 2015 figure. Just over one in ten (12%) adults usually walked to work and half (52%) of children usually walked to school as their main mode of transport<sup>27</sup>. These figures are supported by research, which reported that 10.6% of pedestrians surveyed on the national cycle network were commuting<sup>28</sup>.

Two thirds of people reported having walked as a means of transport on at least one day in the previous week and one quarter (23%) reported having walked as a means of transport within the last six or seven days. Almost two-thirds (61%) also reported walking for pleasure at least once in the previous week<sup>29</sup>.

There are differences in walking based on age, with the frequency of walking decreasing as people get older. Three-quarters (77%) of 16-19 year olds had walked to a destination in the previous week, compared to under half (45%) of those aged over 80 years. More respondents most often reported that the weather (18%) and their health (16%) prevented them from walking more regularly<sup>30</sup>.



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### Wales<sup>31</sup>

In Wales, almost two-thirds (61%) of adults walked for at least five minutes once or twice a week and almost half (47%) walked at least three times a week in 2016/7. The amount of walking varied by the area the individual lived in. Three quarters (72%) of people living in urban areas walked for at least 5 minutes more often than once a month, compared to just less than two-thirds (59%) of those from rural areas. Travelling to the local shops, visiting friends and relatives and work were the main reasons that individuals in Wales chose to walk. Fewer children walk to school in Wales than in England and Scotland. In Wales, fewer than half (44%) of all primary school pupils and one-third (34%) of secondary school pupils typically walked to school in 2016/7.



## Benefits and Risks of Walking

### Benefits

The government and public health bodies encourage people to aim for 30 minutes of moderate physical activity per day. As walking is a low cost activity and requires no special skills, it is one of the easiest ways to become physically active.<sup>32</sup> Journeys of less than two miles can often be completed on foot, so walking can easily be built into an individual's routine.

There are many benefits for individuals of regular walking, including:

- Reducing the risk of dying prematurely, especially from heart disease
- Reducing the risk of stroke
- Reducing the risk of diabetes
- Reducing the risk of developing high blood pressure
- Helping to reduce blood pressure in those who have already been diagnosed with high blood pressure
- Reducing the risk of developing colon and breast cancer
- Helping to control weight
- Helping to build and maintain healthy bones, muscles and joints
- Helping older adults to become stronger and maintain their mobility
- Promoting psychological wellbeing
- Reducing feelings of depression and anxiety
- Saving money by cutting down on fuel, parking and public transport costs.

There are also a number of benefits at an environmental level, including:

- Easing congestion
- Reducing noise pollution
- And cutting exhaust emissions

Finally, there are a number of benefits for employers, at a business and organisational level, including:

- Reducing organisational transport costs
- Reducing the need for car parking spaces
- Helping to meet criteria for accreditation schemes such as the Healthy Working Lives Award
- Increasing productivity through improved staff wellbeing:
  - Back pain is the most common cause of sickness absence from work in the UK, with an estimated 16 million people affected each year. Evidence suggests that physical activity can reduce a person's risk of suffering from back pain and aid recovery from back pain.
  - Work related stress, depression and anxiety is the second most common reason for work-related sickness absence. Physical activity has been shown to have an anxiety-reducing effect<sup>33</sup>.

If everyone in a town of 150,000 people walked for ten minutes or more per day, 31 lives a year would be saved, with a value of £30 million<sup>34</sup>. However, despite the health benefits of walking and the government's guidance on recommended physical activity, a recent report highlighted that four out of ten adults aged 40 to 60 do not achieve ten minutes of brisk walking over a period of a month<sup>35</sup>.



## Risks

Every year in Britain, around 23,000 pedestrians are killed or injured in police reported road accidents, including over 5,000 who are killed or seriously injured.

**Table 1: Number of pedestrians killed or injured in reported road accidents, Great Britain, 2012-2016<sup>36</sup>**

	<b>Killed</b>	<b>KSI</b>	<b>All severities</b>
<b>2012</b>	420	5,979	25,218
<b>2013</b>	398	5,396	24,033
<b>2014</b>	446	5,509	24,748
<b>2015</b>	408	5,348	24,061
<b>2016</b>	448	5,588	23,550

These figures only include accidents reported to the police. It is important to note that there is no obligation for people to report all personal-injury accidents to the police (although there is an obligation in certain conditions, as outlined in the Road Traffic Act). These figures are, therefore, likely to underestimate the full range of pedestrian accidents and casualties in Great Britain.

Along with the risk of injury, there are concerns about the effects of air pollution on pedestrians. Air pollution contributes to around 40,000 early deaths per year, and active travel, such as walking and cycling, could increase the intake of air pollution, leading to negative health consequences. However, if more walking and cycling is achieved by reducing motorised road journeys it could reduce air pollution.

A recent study<sup>37</sup> examined the risk-benefit balance between active travel related activity and exposure to air pollution in various travel conditions. The authors explored the ‘tipping point’, at which individuals no longer gained any health benefits from participating in active travel. The authors also calculated the risk of reaching a ‘breaking point’, at which the risk of air pollution begins to outweigh the benefits of active travel. However, the study concluded that the benefits of active travel generally outweighed the risks, with an individual in an average urban area needing to walk for 16 hours a day before beginning to experience negative effects on their health, far more than the average individual would walk in a day.

### Pedestrian Casualties and Casualty Rates

In 2016, there were 23,550 pedestrian casualties, of which 5,998 were children aged 0-15 years. This means that a quarter of pedestrian casualties are children.

**Table 2: Number of pedestrians killed or injured in reported road accidents, by age, Great Britain, 2016<sup>38</sup>**

	<b>Child (0-15 years)</b>	<b>Young people (0-17 years)</b>	<b>Adult (18-59 years)</b>	<b>Adult (60+ years)</b>
<b>Killed</b>	<b>34</b>	<b>43</b>	<b>218</b>	<b>186</b>
<b>Serious</b>	<b>1,253</b>	<b>1,414</b>	<b>2,346</b>	<b>1,324</b>
<b>Slight</b>	<b>4,711</b>	<b>5,392</b>	<b>9,532</b>	<b>2,674</b>
<b>Total</b>	<b>5,998</b>	<b>6,849</b>	<b>12,096</b>	<b>4,184</b>

The majority of pedestrian casualties occur in built up areas: 29 of the 34 child pedestrians and 302 of the 413 adult pedestrians who were killed in 2016, died on built-up roads. Pedal cyclists are also vulnerable in built up areas, with over half of cyclist deaths (58 of 102) and most cyclist casualties (16,934 of 18,477) occurring on these roads.<sup>39</sup>



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In 2015, 511 pedestrians aged 0-16 were killed or seriously injured in an accident between 7:30 and 8:59am and 3:00 and 4:59pm on a school day.<sup>40</sup> Pedestrians are vulnerable road users, with 35 killed and 442 killed or seriously injured per billion vehicle miles. In comparison, two car drivers are killed and 26 killed or seriously injured per billion vehicle miles travelled<sup>41</sup>. Those most at risk are 5 to 14 year olds, probably because they are inexperienced and more likely to take risks. Nearly one third of child pedestrian casualties are on their way to or from school at the time of the accident<sup>1</sup>. As children become more independent and start to travel on their own, this corresponds with a rise in the casualty rate from the ages of 9-12 years.<sup>42</sup>

It is important to understand whether any increase in pedestrian casualties is due to more walking or walking becoming less safe. This is because more people choosing to walk could result in more pedestrian casualties, but a reduction in the casualty rate per billion vehicle miles travelled, means walking becomes safer. Once a critical level of walking is reached, a 'safety in numbers' effect could occur, whereby the accident rate decreases because infrastructure improvements have been adapted to the increasing numbers of pedestrians.

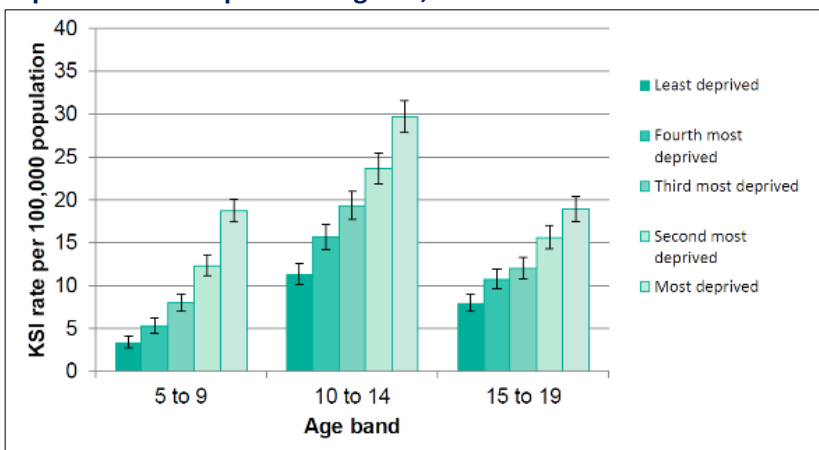
Drivers may also expect to see more pedestrians and adapt their driving accordingly.<sup>43</sup> For example, although the amount of walking and cycling varies across Europe and North America, from 6% of all trips in the USA to 46% in The Netherlands, the per capita fatal injury rate is very similar in both countries. This shows that the number of pedestrian casualties does not necessarily vary linearly with the number of pedestrians.<sup>44</sup>

The Public Health Outcomes Framework<sup>45</sup> sets overarching outcomes and 17 key indicators for public health, one of which is to reduce the number of people killed or seriously injured on England's roads. Therefore, every local authority in England is required to produce a Joint Strategic Needs Assessment and a Wellbeing Strategy and Investment Plan to assess the current and future health needs of the local population and to inform and guide the planning of health, wellbeing and social care services within the local authority area.

**Links with Poverty**

One of the overarching outcomes of the framework is to reduce differences in life expectancy and healthy life expectancy between communities through greater improvements in more disadvantaged communities. Children in deprived areas are at much greater risk of being involved in an accident than those living in affluent areas. In fact, among pedestrians in the five to nine years age group, the risk of serious and fatal injuries to children living in the 20% most deprived areas is six times higher than those living in the 20% least deprived areas and among 10-14 year olds, a 2.6 time greater rate, as shown in the graph below.<sup>46</sup>

**Chart 1: Rate of killed or seriously injured casualties per 100,000 of the population, by age band and multiple deprivation 2010 quintile. England, 2012-2016.<sup>47</sup>**



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Poverty influences many of the factors that cause road accidents. Although the health of infants, children and young people has improved dramatically over the last 30 years,<sup>48</sup> accidental injuries still disproportionately affect children from low-income families. For example, children in the 10 per cent most deprived wards in England are four times more likely to be hit by a car than children in the 10 per cent least deprived wards.<sup>49</sup> Road deaths, especially among pedestrians and cyclists, are particularly high among children of parents classified as never having worked or as long-term unemployed.<sup>50, 51</sup>

A study of road accident data has shown that there would be around 800 fewer serious or fatal injuries to child pedestrians annually, and 136 fewer serious or fatal injuries to child cyclists, if all children had a risk of injury as low as children did in the least deprived areas.<sup>52</sup>

Targeting interventions to help those who are poorest would make an important contribution to reducing accidents and health inequalities. With addressing inequalities at the heart of the Public Health Outcomes Framework, a national strategy focusing on any area of public health must incorporate action on this issue. These issues will be presented in more detail in the National Accident Prevention Strategy due to be published in October 2018.<sup>53</sup>

It is important to use data and research targets and subsequently evaluate accident prevention interventions. Practitioners are encouraged to make use of Public Health England's Fingertips tool.<sup>54</sup> It is also promising that a new Emergency Care Data Set (ECDS)<sup>55</sup> was being rolled out across A&E departments nationally from October 2017 which will hopefully provide a clearer picture of the causal factors that result in accidental injuries in the next few years.

### Older Pedestrians

Around 40% of pedestrian deaths in Great Britain are among people aged 60 years or over<sup>56</sup>. The risk of an accident crossing the road increases more rapidly with age from the early 60s, very rapidly from 70 years and substantially after about 79 years. Accidents are closely related to the times and places that older people most often walk, being more common during the day and within 1km of home. As with car occupants, the injuries caused to older pedestrians in collisions are more severe than for younger people<sup>57</sup>.

Older people do not necessarily feel any more vulnerable than other pedestrians and their concerns about safety as a pedestrian tend to focus more on the experience of walking on the pavement than on crossing the road. While their attitude to crossing the road is probably more cautious than others, bad habits, such as "chancing it" by not using a crossing, have changed little since they were younger.<sup>58</sup>

The key measure to address the risk for older pedestrians is to provide a safer environment that is designed for their needs, and that encourages walking, given the importance of physical activity for health and wellbeing, and associated environmental benefits.

The prevalence of the fear of falling among older people who have fallen can result in activity avoidance, loneliness and social isolation<sup>59</sup> – all factors that can increase someone's risk of falling and other negative impacts on their health and wellbeing.<sup>60</sup> Indeed, a fall can be a "trigger point at which people start to lose capacity".<sup>61</sup>

A strategic approach to falls prevention among older people has the potential to bring significant improvements, for the health and wellbeing of older people themselves and for the health and social care sector. About a third of people aged 65 years and over fall each year, as do half of those aged 80 years and over. More than 4,500 people in England over the age of 65 years died because of a fall in 2015.<sup>62</sup> For those who survive a fall, the road to recovery



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can be arduous, with many never regaining the independence or level of health and mobility they had before they fell.

### Key Statistics

- The vehicles most commonly involved in accidents involving pedestrians are cars, vans/light goods vehicles and taxis or private hire cars<sup>63</sup>.
- In 2016, almost three quarters of pedestrian fatalities and over 95% of pedestrian casualties occurred on built-up roads (excluding motorways)<sup>64</sup>.
- 29 of the 34 child pedestrians and 302 of the 413 adult pedestrians who were killed in 2016, died on built-up roads.
- A higher number of incidents resulting in a pedestrian casualty occur in the winter months<sup>65</sup>.
- More men than women are injured on the roads when travelling as a pedestrian. In 2016, 56% of pedestrian casualties and 66% of pedestrians killed in road accidents were men<sup>66</sup>.
- The most common contributory factors assigned to drivers and riders in Britain were failed to look properly (42%), failed to judge the person's path or speed (22%) and careless, reckless or in a hurry (18%).
- The same applies to pedestrians. In 7% of accidents, the pedestrian had failed to look properly, in 3%, they were careless, reckless or in a hurry and in 2% they failed to judge the vehicle's path or speed or crossed a road masked by a stationary or parked vehicle<sup>67</sup>.



## Public Policy

### DfT Walking and Cycling Investment Strategy<sup>68</sup>

In 2017, the Department for Transport published the Cycling and Walking Investment Strategy (CWIS), with the aim of making cycling and walking the natural choice for shorter journeys, or as part of a longer journey, regardless of age, gender, fitness level or income. Individuals are encouraged to consider walking or cycling for a number of purposes, including travelling to a place of work or education, travelling to the bus or train station or for pleasure.

The strategy seeks to increase walking activity (total number of walking stages per person per year) to 300 per year by 2025 (research suggests that, if achieved, there would be £279 million benefits in reduced air pollution per year<sup>69</sup>) and increase the percentage of children aged 5-10 that usually walk to school from 49% in 2014 to 55% in 2025.

The Investment Strategy states, 'Realising our ambition will take sustained investment in cycling and walking infrastructure. It will take long term transport planning and a change in attitude. Walking and cycling should be seen as transport modes in their own right and an integral part of the transport network, rather than as niche interests or town planning afterthoughts'.

The Department for Transport aim to meet these objectives by providing over £1 billion of government funding to local bodies to invest in cycling and walking over five years. Delivery will include cycling and walking programmes, local transport programmes, Government programmes, local body programmes and initiatives led by business and the third sector. These will provide:

- Better safety- including streets where pedestrians and cyclists feel they belong and are safe and safer traffic speeds, with lower speed limits where appropriate.
- Better mobility- including more urban areas that are considered walkable, rural roads which provide improved safety for cycling and walking, a dense network of routes near public transport hubs and town centres, better links to schools and workplaces and technological innovations to promote cycling and walking.
- Better streets- places designed for all abilities and ages, better planning for walking and cycling and a wider green network of walkways, routes and open places.

RoSPA strongly supports the vision as outlined in the Investment Strategy.

In RoSPA's view, the ambition to significantly increase the amount of walking will only be achieved if people feel safe when walking, otherwise the huge numbers of people who would walk more if they felt they could do so, are unlikely to be persuaded that it is actually safe and convenient enough for them.

The key to increasing walking is to create a safe walking environment with safe and convenient crossing places, improve road user attitudes and behaviour towards each other, and safer vehicles that reduce the risk of collisions occurring and the severity of those that do occur and reduced vehicle speeds in areas with high pedestrian movement.

RoSPA's response to the consultation on the Walking and Cycling Investment Strategy can be found:

<https://www.rospa.com/rospaweb/docs/advice-services/road-safety/consultations/2016/cycling-walking-investment-strategy.pdf>





### Active Travel (Wales) Act 2013

In 2013, Wales introduced an Active Travel Act. The Active Travel (Wales) Act 2013 is Welsh law to make it easier for people to walk and cycle in Wales. The Act requires Welsh ministers to publish annual reports on the amount of active travel journeys made in Wales. The act also encourages securing new and improved active travel routes and facilities and to promote active travel such as walking and cycling.

### NHS Healthy New Towns<sup>70</sup>

Healthy New Towns, supported by the NHS and Public Health England, puts health at the heart of new neighbourhoods and towns across the country. The programme has invited local bodies, housing associations and the construction sector to identify projects where they would like NHS support in creating healthy towns and neighbourhoods in England. The programme aims to:

- Explore new approaches to shaping the built environment to promote strong communities with healthy lifestyles and to support people to remain independent.
- Demonstrate radical new models of deeply integrated care, going beyond and exploiting opportunities to innovate.
- Accomplish these objectives in ways that can be replicated elsewhere.

### Department for Health Walking Cities<sup>71, 72</sup>

The Department for Health provided £1.2 million over five years for five cities (Birmingham, Manchester, Leeds/Bradford, Norwich and Cambridge) to encourage more people to walk. The aim is to target the particularly inactive and those who are less well socially situated. The main achievement for these cities has been the ability to increase their knowledge of walking and build expertise on walking projects they can implement in their own communities. The Department for Health strongly encouraged support from organisations that specialise in walking including Living Streets, The Ramblers, Britain on Foot and Sustrans as well as community interventions such as 'Beat the Street'. These cities have formed partnerships with new organisations; with some projects continuing after funding had ended. For example, in Greater Manchester, a 'walking festival' was funded by the project and was deemed such a success that it is now an annual event.

### Public Health England Everybody Active, Everyday<sup>73,74</sup>

As physical inactivity now contributes to around one in six deaths in the UK, Public Health England published an evidence-based framework in 2014 called 'Everybody Active, Everyday', highlighting that walking and cycling are often the easiest ways to build activity in everyday life and are good for both physical and mental health. Public Health England worked closely with a number of organisations, including RoSPA, to produce a range of design guides, evidence informed briefings and toolkits to support local authorities in their efforts to increase active travel. The funding for local authorities has been outlined until 2020.

### National Planning Policy<sup>75</sup>

National Planning policy sets the approach to promote sustainable forms of travel, such as cycling and walking. One of the core principles is that the planning system should make the most of public transport and sustainable transport, focussing on developing sustainable locations. The Community Infrastructure Levy allows local authorities in England and Wales to raise funds from building project developers to help provide vital infrastructure, based on the needs of the community. The Levy is used to fund a wide range of infrastructure, including parks, transport and leisure facilities. These developments should give priority to cyclist and pedestrian movements and high quality public transport systems, create safe street layouts to avoid conflict between traffic and cyclists or pedestrians and build key facilities (primary schools and local shops) within walking distance of homes.



### **Paths for Communities<sup>76</sup>**

The Paths for Communities scheme (P4C) to encourage communities to create public rights of way for use by pedestrians, cyclists and horse riders was launched in 2012 under the Rural Development Programme for England (RDPE). It resulted in 55km of bridleways and 21km of footpaths. An evaluation showed that the paths were encouraging use and a wider range of use, with 1 in 7 users of the paths being classified as a new user.

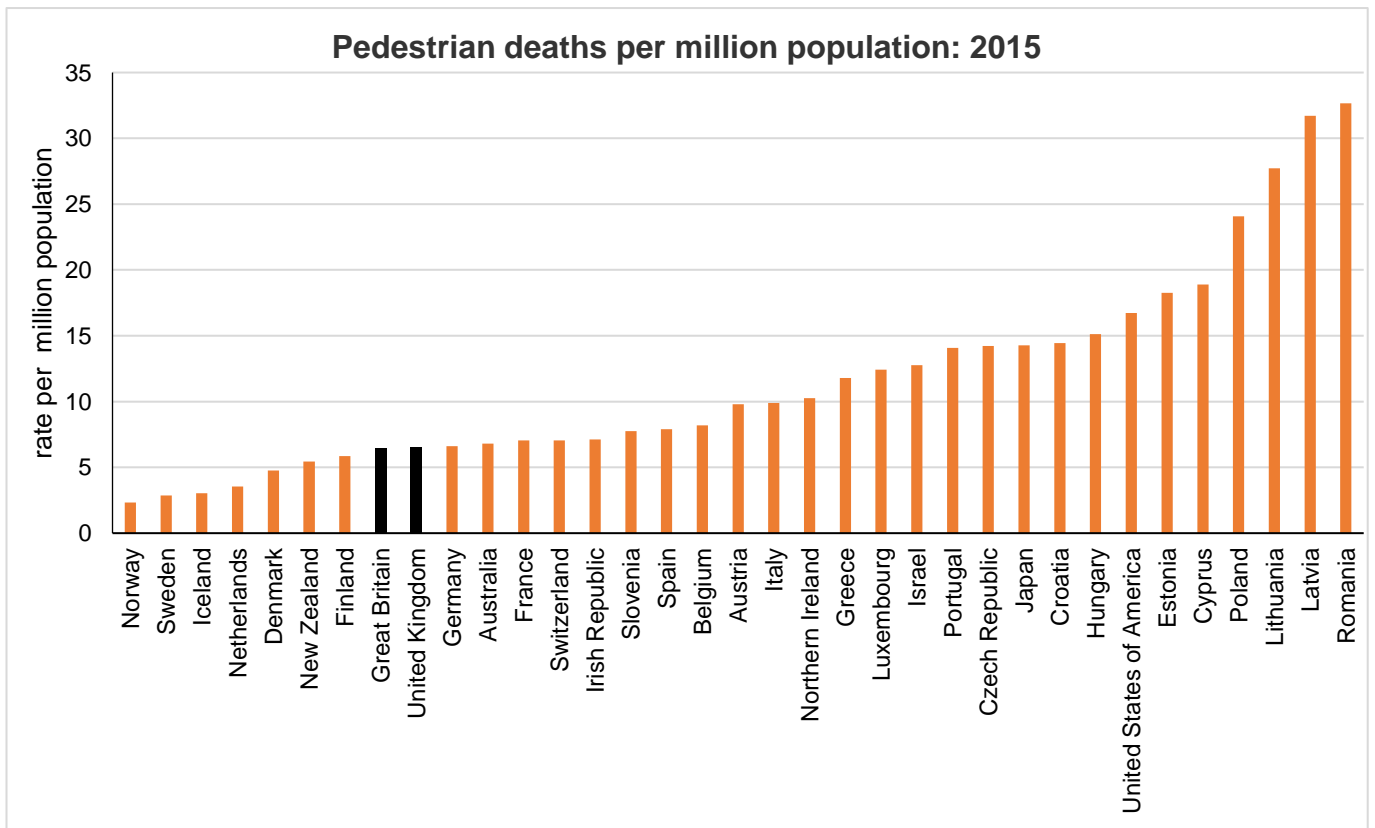


## Comparisons with other countries

Globally, 22% of all who died in road traffic collisions were pedestrians.<sup>77</sup> This is similar to the figure (23% of all road deaths) for Great Britain. The share of pedestrian deaths was particularly high in Romania, Latvia, Poland and Lithuania, where more than one third of those killed on the road were pedestrians.

This is supported by data from the International Road Traffic and Accident Database (OECD), ETSC, EUROSTAT and CARE (EU road accidents database). The graph below shows international comparisons of the pedestrian death rate per million of the population for 2015.

**Chart 2: Pedestrian deaths per million population, international comparison, 2015<sup>78</sup>**



## A Safer Walking Environment

Busy urban roads, junctions and high-speed roads without adequate consideration of pedestrian facilities increase the likelihood that pedestrians will be injured or killed while walking alongside or crossing the road.<sup>79</sup> Two general approaches create a safer physical environment for pedestrians:

- Introducing a 'safe system' approach to road design that reduces the risk of crashes occurring, and the severity of any that do occur, making fatal injuries unlikely
- Reducing motor traffic volume

The Safe System approach is advocated by the World Health Organisation and Vision Zero philosophy<sup>80</sup>. It is based on the understanding that injury is caused by an exchange of energy in quantities higher than human tolerance to it. Preventing or minimising this exchange of energy, therefore, prevents injuries. The safe system approach has been adopted in some other countries, such as The Netherlands, Sweden, and New Zealand, and components of the approach have been adopted in the Safe streets for London Action Plan<sup>81</sup> and Highways England's strategy<sup>82</sup>.

The Safe System recognises that people make mistakes, and designs roads and vehicles so that these mistakes are not likely to result in death or serious injury and proposes that roads, vehicles, and traffic speeds are modified to prevent exchanges of energy that are likely to cause fatal or serious injuries. This approach can be applied to all types of roads and all road users. In general, the safe system philosophy identifies ways of separating traffic, and especially separating vulnerable road users from motor vehicle traffic on high-speed roads. Where this cannot be achieved, roads should be designed to reduce traffic speed.

The Scottish Government<sup>83</sup>, Highways England<sup>84</sup> and Transport for London (TfL)<sup>85</sup> have, or are, introducing the Safe System principles in their strategies. As this vision will take much time to achieve, interim targets are set, for example, Scotland's Road Safety Framework includes a target to achieve a 40% reduction in killed or seriously injured casualties by 2020, from a baseline of the 2005-09 average. Highways England's Delivery Plan includes the "goal of bringing the number of people killed or injured on the network as close as possible to zero by 2040" TfL's aim is for deaths and serious injuries from road collisions to be eliminated by 2041.

The International Safety Standard, "Road Traffic Safety Management Systems", (ISO 39001)<sup>86</sup> also advocates the adoption of a Safe System approach, stating that high levels of safety can be attained by achieving a good match between the function of the road, safe speed limits and their compliance and design and layout. Typical issues include separating on-coming traffic on high volume, high-speed roads to prevent head-on collisions and providing crash protective roadsides to address run-off road collisions.

Studies have estimated the number of lives that could be saved by the safe system. For example:

- A Swedish study<sup>87</sup> in 2004 judged that in 63% of these crashes, the road or vehicle did not meet the safety standards of the safe system approach, and concluded that these deaths could have been prevented by the safe system, even without addressing road user behaviour.
- An Australian study<sup>88</sup> in 2008 categorised 57% of crashes as failure of the safe system.

RoSPA recommends the further adoption of the Safe System approach throughout Great Britain.



## Design Guidelines

The Department for Transport has published guidance documents to help local authorities design safe road infrastructure, including “Manual for Streets 2”<sup>89</sup>. RoSPA believes that a national design standard should be developed to ensure that all schemes are delivered to a set safety standard. Without this there is a risk that schemes will be implemented which at best have no safety benefits and at worst create danger to some vulnerable road users. Post-implementation monitoring should take place in all cases to allow for adjustments to mitigate unforeseen issues during the design stage’.

Walking routes should be continuous, direct and join up residential areas, commercial areas and schools. Pedestrians need safe and well-designed footways and crossing facilities and walking routes that are:

- Direct – shortest, quickest route to minimise delay. Continual starting and stopping to cross roads is both frustrating and tiring.
- Safe – The route must be both statistically safe and feel safe
- Coherent – Joined up and easy to follow
- Attractive – Enhance the existing streetscape
- Comfortable – Clean, smooth surface in all weathers
- Adaptable - Allow future upgrades to accommodate an increase in use

Designing infrastructure for pedestrians should include a full understanding of the street or context in which it is located. Living Streets<sup>90</sup>, a pedestrian rights charity, recommends the following overarching principles for creating a safe and pleasant environment for walking and cycling:

1. Residents of a town or city should be encouraged to walk and bike as much as possible in connection with their daily activities.
2. Cycling and walking are entirely legitimate, desirable, every day, ‘grown up’ modes of transport, worthy of investment.
3. Both pedestrians and cyclists are highly vulnerable to, and restricted by, motor traffic. Increasing cycle and walking mode share should be part of an integrated approach to decreasing car mode share.
4. Walking and cycling are two very different modes: mixing them together inappropriately can cause fear, anxiety, insecurity and even serious injury.
5. Improving cycle safety and convenience should not diminish pedestrian safety and convenience.
6. Any change to the street environment must take into account the accessibility needs of all kinds of users.
7. Where a satisfactory balance between road users cannot be achieved, a framework for identifying priority between them must apply. ‘Capacity to cause’ harm (health, climate change, noise, danger to others and air pollution) should underpin this decision-making.
8. Context is key – standard design solutions must not be ‘dropped in’ without a full appreciation of the street’s own unique context and many different functions. Local people must be consulted and existing use measured (for example, pedestrian flows).



## Road Maintenance

Badly maintained footways can create a major tripping hazard for pedestrians. Although considerable funding is provided to local authorities, pothole patching is at best an inefficient, poor value and temporary solution. It is essential that highly used footways and cycle routes are maintained to a high standard and are regularly inspected. RoSPA believes that proper re-surfacing programmes of whole roads or stretches of roads are a more cost-effective approach than repairing individual potholes.

## Speed

One of the most effective ways of improving pedestrian safety is reducing vehicle speed. This is because even at a relatively low impact speed, pedestrians receive more severe injuries than many other road user groups in collisions, because their only protection is often their clothes. Speed plays an important role in determining the severity of outcome in collisions because at lower speeds, drivers have more time to react to the unexpected and avoid collisions<sup>91</sup>. There are several engineering measures that can be implemented to reduce vehicle speed, therefore, preventing pedestrian collisions.

### 20mph schemes

Speed significantly increases injury severity in collisions, making serious or fatal injuries more likely. Research has shown that the risk of death for pedestrians struck by cars increases at higher impact speeds. The most recent modern estimates of the risk to pedestrians when struck by cars at different speeds as shown in Table 4 below, which shows a fatality risk of 1.5% at 20 mph versus 8% at 30 mph.

**Table 4: Risk of pedestrian or cyclist death according to impact speed.**

Country and years of data analysed	Most likely estimated risk of death at 20mph	Most likely estimated risk of death at 30mph
Great Britain 1985-1979 <sup>92</sup>	5%	45%
Germany 1991-2003 <sup>93</sup>	4%	14%
Great Britain 2000-2007 <sup>94</sup>	~2%	~12%
South Korea 2003-2005 <sup>95</sup>	7%	37%
Germany 2003-2007 <sup>96</sup>	~1%	~8%



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There are two distinct types of 20mph areas: 20mph Zones and 20mph Limits.

### 20mph zones

20mph zones are roads with 20mph limits that are designed to be "self-enforcing" due to traffic calming measures such as speed humps, speed cushions, chicanes, road narrowing, planting and so on. The traffic calming features that physically and visually reinforce the 20mph limit and emphasise the shared nature of the road include:

- Measures that require motorists to change their direction of travel by moving to the left or to the right
- Measures that require motorists to change elevation by going up or down<sup>97</sup>

The first widespread evaluation of 20mph zones in the UK, carried out by TRL in 1996<sup>98</sup>, found that injury accidents were reduced by 60%, and child injury accidents were reduced by 67%. Traffic fell by 27% in the zones during the evaluation, probably due to bypasses that were built in conjunction with some of the schemes to take through traffic away from the area. The evaluation found no evidence that accidents increased on surrounding roads due to drivers changing their route.

Following the widespread introduction of 20mph zones in Hull, casualty statistics between 1994 and 2001 fell by 14% in Hull, compared to a rise of 1.5% in the rest of Yorkshire and Humberside. The 20mph zones in Hull saw a 56% fall in accidents and a 90% drop in fatal and serious injuries. Pedestrian casualties fell by 54%, child casualties by 54% and child pedestrian casualties by 74%<sup>99</sup>.

A review of road casualties in London between 1986 and 2006<sup>100</sup> demonstrated that 20mph zones reduced the number of casualties by over 40% (41.9%). Fatal or serious injuries to children were reduced by half (50.2%) and there was a smaller reduction among cyclists, with a reduction of 16.9%. The reduction in road injuries in 20mph zones occurred at a greater rate than the overall reduction in casualties in London, and there was no displacement in accident risk to roads close to the 20mph zones. A 2007 review of 20mph zones in London (78 zones) found that they reduced injury accidents by about 42% and fatal or serious accidents by 53%<sup>101</sup>.

Based on these casualty reductions, the North West Public Health Observatory predicted introducing 20mph zones in all residential zones in the North West would have prevented 140 killed or seriously injured child casualties. In addition, there would have been a 26% reduction of all pedestrian casualties and 14% reduction in all cyclist casualties.<sup>102</sup>

### 20mph limits

Although the evidence shows that 20mph zones are an effective way of preventing injuries on the road, there is less experience with 20mph limits roads, the number of which has increased significantly in recent years. 20mph limits are roads with a 20mph limit, with speed limit signs and road markings, but no traffic calming measures to reduce vehicle speeds, although some physical measures, such as build-outs at pedestrian crossings and marked parking bays, may be introduced. However, the emphasis is on drivers voluntarily complying with the limit because the road has a 20mph 'feel' to it.

A rapid expansion of 20mph limits is underway in Great Britain, with many local authorities introducing them across a significant proportion of their roads. The aim is not just to improve road safety, but also to improve health by providing a safer and more pleasant environment that encourages and enables more people to walk and cycle more often, and to improve social benefits, social connectivity and community cohesion. They are an example of good synergy between road safety and other public health outcomes.



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In Portsmouth, a 20mph limit introduced on around 94% of roads that previously had a 30mph limit was monitored. Overall, average speeds reduced from 19.8 mph to 18.5 mph (a drop of 1.3 mph) following the introduction of the limits. The reduction in average speeds varied from 0.6 mph to 1.7mph across these 223 roads.<sup>103</sup>

Bristol also piloted 20 mph limits and found that after their introduction of the lower limits, daytime speeds on residential roads fell by 0.4 mph on average, and on main roads, by between 1.7 mph and 1.3 mph on average.<sup>104</sup>

In a pilot scheme in South Central Edinburgh, average 'before' speeds fell to 20.9mph, an average fall of 1.9mph. In locations where the speed limit remained at 30mph, the average fall in speed was 0.8mph. On some roads with average before speeds of 25.8mph, the speeds fell by 3.3mph. However, there were some slight increases in average speeds in some locations.

Overall, the speed surveys demonstrated that 20mph speed limits reduced speeds in most cases, although not necessarily to 20mph or less. Other benefits were strong residential support, with surveyed residents citing safety for children walking and playing in the street, and better walking and cycling conditions. In the year following the launch of the scheme, there was a 7% increase in journeys by foot, a 5% increase in journeys by bicycle and a 3% fall in journeys by car.

However, despite the evidence that 20mph speed limits can lead to small reductions in vehicle speed, a 2017 survey<sup>105</sup> revealed that more than half (52%) of drivers admit to driving at 25mph or faster in a 20mph speed limit, and 26% admitted to speeding in 20mph limits once a week or more.

RoSPA believes that 20mph limits, which it is estimated can be introduced at just 1/6<sup>th</sup> of the cost of a traditional 20mph zone, are most appropriate for roads where average speeds are already low, and the guidance suggests below 24mph. The layout and use of the road must also give the clear impression that a 20mph speed or below is the most appropriate.

It is important that the long-awaited Atkins report<sup>20</sup> on 20 mph Speed Limits is published as soon as possible.

Where 20 mph speed limits are introduced, they should be supported with education and publicity measures to ensure driver compliance, together with engineering measures, if 20mph does not feel the appropriate speed. Without this little will change and the perception that the roads are too dangerous will continue. There is strong public support for 20mph limits - 72% of respondents in the British social attitudes survey<sup>19</sup> are in favour or strongly in favour of 20mph speed limits in residential streets. However, this will soon be lost if they are nationally introduced and largely ignored by motorists.

More effort is needed to establish how best to persuade drivers to comply with 20 mph limits.

### Traffic calming

Other engineering measures can reduce speed, such as traffic calming. Traffic calming can contribute to population health, and reduce the number of collisions by around 15%, increasing feelings of safety in the streets and reducing the numbers of casualties and deaths.<sup>106</sup> Traffic calming in towns can benefit economic growth and local trade, and make people feel more relaxed, encouraging them to walk and to visit more shops<sup>107</sup>. There are also environmental benefits, which in turn improve individuals' health, such as reducing noise and air pollution. A combination of traffic-calming measures provide the greatest benefit and should be implemented in various streets across an area, rather than in just a few isolated areas.<sup>108</sup>





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### Speed humps<sup>109</sup>

Speed humps slow and discourage traffic. The standard round topped kerb-to-kerb speed reduce mean vehicle speeds by 11-16mph, 75mm high flat top and round-top bumps reduce speeds by an average of 10mph and speed cushions, although not as effective as speed humps, reduce speed by 2-7mph higher. Speed cushions can be more suitable than speed humps on bus routes.

RoSPA does not support the removal of speed humps where there is an identified need to manage vehicle speed. If speed humps are removed, they should be replaced by other measures that mean that the road is no less safe for pedestrians. A research study found that speed cushions produced less nitrogen oxide than speed humps<sup>110</sup>.

### Chicanes<sup>111</sup>

Chicanes or pinch points (a build out of the kerb line to narrow the carriageway, usually on alternate sides of a single carriageway) can also be an effective measure to reduce vehicle speed. One study found that they had the potential to reduce speeds and improve perceptions of safety for pedestrians, meaning that children were allowed to play outside, walk to school and cycle more<sup>112</sup>.

### Junctions<sup>113</sup>

Junctions are associated with high rates of pedestrian collisions and injuries because they include a high number of pedestrian and vehicle conflict points. Uncontrolled junctions exacerbate this, as some vehicles may be approaching at a high-speed and are not required to give right of way to pedestrians. Signalised junctions (those with traffic lights) appear to be safer for pedestrians than uncontrolled junctions are; however, they can still be dangerous environments for pedestrians.

### Safe crossings<sup>114, 115</sup>

#### Pelican crossings

Pelican crossings are typically used on roads with high traffic volumes, high speeds or high pedestrian volumes. The phasing of the lights and time allocated for pedestrians to cross the road is set by DfT guidelines based on the width of the road. Although it is safer to cross at a crossing, research has found that when pelican crossings were introduced, pedestrians were less cautious when crossing, did not always look for traffic before crossing the road and looked at traffic less while crossing the road.

#### Puffin Crossing

Puffin crossings detect pedestrians on the crossing and vary the amount of time the red light displays to stop vehicles accordingly. The 'red man'/'green man' indicator is located on the signal pole rather than on the far side of the road like a pelican to help those with visual impairments and to encourage pedestrians to watch the traffic and the signal simultaneously.

#### Toucan and Pegasus crossings

Toucan crossings allow pedestrians and cyclists to share a crossing, while Pegasus crossings include horse riders as well as pedestrians and cyclists. Both operate in the same way as a pelican or puffin crossing.

#### Zebra crossings

Zebra crossings give priority to pedestrians over vehicles without traffic controls. Some researchers argue that collision risk is higher at these crossings because they give pedestrians a sense of security without stopping traffic.<sup>116</sup>



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### Countdown timers

Countdown timers indicate the amount of time pedestrians have left to cross the road. Research suggests that they can be useful, especially at wider crossings or where there are many elderly people and those with disabilities. However, it is important to have an 'all-red' phase for a few seconds to allow any pedestrians to complete their crossing and to discourage drivers from having a 'head-start'.

Although pedestrian crossings are often perceived as safe places to cross the road, this may not always be the case. Crossings give some protection to pedestrians, but some pedestrians disregard the crossing signals. The longer a pedestrian must wait for the 'green man' signal, the more likely they are to cross while the 'red man' is showing. Pedestrians are normally prepared to wait up to 30 seconds for the 'green man' to show, with those waiting over 40 seconds more tempted to cross on the 'red man'.<sup>117</sup> Pedestrians will try to minimise the distance they have to walk and reduce their waiting times, often disregarding the Highway Code and taking risks. Being in a hurry and the desire to keep moving are often the reason that pedestrians disobey signals.<sup>118</sup>

Pedestrian crossings can be enhanced in a number of ways:<sup>119</sup>

- Skid resistant surface on approach to all crossings to enable drivers to stop more easily.
- Moving the stop line at signalised crossings to enable drivers of larger vehicles to see pedestrians more easily.
- Widening crossings so that pedestrians are less likely to walk off the crossing.
- Reducing road widths at crossings so that pedestrians can travel a shorter distance to cross the road.
- Re-locating crossings to align with pedestrian desire lines so they are more likely to make use of the crossing.
- Adding refuges at crossings so that pedestrians have fewer lanes to cross at a time.
- Adding dropped kerbs at crossings to assist those with physical impairments and tactile surfaces to help those with visual impairment.
- Adding light-controlled pedestrian crossings, particularly on high-speed roads or those with a high level of traffic flow. It is thought that signalised crossings halve the risks of pedestrians being involved in a collision rather than crossing without these facilities.
- Installing guardrails can reduce conflict between pedestrians and other road users. This is a safety fence at the edge of the pavement, often installed where there is a risk of collision from pedestrians walking into the road. Despite this, there is some evidence that guardrails may not be effective at encouraging all pedestrians to cross at a designated pedestrian crossing. Zheng and Hall (2003) found that although there were safety benefits of installing guardrails at crossings, they could also encourage more risky behaviour by pedestrians more determined to cross, such as jumping over the railings. Therefore, they should only be installed when necessary. It is also important that they do not obstruct drivers' view of a pedestrian waiting to cross.
- Pedestrian crossings should be well illuminated at night to help drivers to see pedestrians.

### School Crossing Patrols

Road Safety Great Britain's School Crossing Patrol Service survey<sup>120</sup> suggests that the provision of school crossing patrols has fallen in recent years. Research to establish the provision and benefits of school crossing patrols should be conducted.



## Shared space

Local Transport Note 1/11<sup>121</sup> defines shared space as *'A street or place designed to improve pedestrian movement and comfort by reducing the dominance of motor vehicles and enabling all users to share the space rather than follow the clearly defined rules implied by more conventional design'*

However, it is made clear that there is no definitive 'shared space' design, meaning that schemes must be suited to local circumstances. One of the key decisions is how much separation there should be between road user groups, e.g. vehicles and pedestrians, and how this should be achieved.<sup>122</sup> The Chartered Institution of Highways and Transportation (CIHT) define three types of shared space<sup>123</sup>:

- **Pedestrian prioritised streets**- streets where pedestrians can move freely anywhere and drivers should feel they are a guest. Currently, there is no formal priority to pedestrians in these areas. Street schemes of this type have generally adopted designs that do not appear to contain a well-defined carriageway so that other road users do not assume that pedestrians need a defined crossing or a driver's permission to cross the street. Such schemes have often used a level surface, sometimes with similar paving types and colours.
- **Informal streets**- streets where formal traffic control (e.g. signage and signals) are absent or reduced. There is a differentiation between the pavement and the carriageway, but this is typically less than in a conventional street. This aims to reduce vehicle speed by creating some uncertainty in driver's minds of whether they have the right of way. Due to the high volume of traffic, these streets still often include formal crossings (such as Pelican crossings) or courtesy crossings (which do not use signs and signals). Tactile paving is often used to indicate a courtesy crossing.
- **Enhanced streets**- where the public realm has been improved by introducing features such as seating, trees and public art and restrictions on pedestrian movement, such as guardrails, have been removed. This is the limit of what can be considered as shared space, as conventional traffic controls remain.

A review of shared space schemes found that in pedestrian prioritised streets, pedestrian volumes were typically high and that more pedestrians in the street space resulted reduced traffic speed, in many cases, to well below 20mph.<sup>124</sup> However, wayfinding can be a problem for some groups (such as young children, older people, non-locals and visually impaired people) in this type of street. Although shared space can remove barriers, such as kerbs and railings, that wheelchair and scooter users find obstructive, other street users especially those who are blind, partially sighted or have cognitive impairments, find the lack of demarcation between space for pedestrians and motorised vehicles difficult.<sup>125</sup>

In many schemes, it was difficult to determine whether shared space was an inclusive environment for all road users. However, the review identified that some user groups, such as the visually impaired, had concerns about shared space environments. Pedestrian connectivity and movement had improved, with more space for walking and reduced delays crossing the street, as well as reduced congestion. Four of the 11 schemes experienced reductions in accidents and casualties. Six other schemes had been neutral in terms of safety and one scheme had insufficient data to compare accidents and casualties with the previous road layout. As over half of the schemes were neutral in terms of safety, this suggests that accidents and casualty numbers remain broadly unchanged or statistically insignificant.<sup>126</sup>

RoSPA supports 'Shared Space' schemes, but it is important that they are carefully designed and the needs of all users are accommodated; it is not a matter of just taking away road signs and markings and kerb lines. Great care must be taken to ensure that people with vision impairments, who rely on a kerb edge to navigate, have a suitable alternative to the kerb that acts as a delineator to enable them to distinguish the section of the single surface used by vehicles. However, the Department for Transport have recommended that local authorities pause the



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development of shared space schemes while they review and update guidance. Local Transport Note 1/11: Shared Space has also been temporarily withdrawn<sup>127</sup>.

### Pedestrians with Special needs

Road design also needs to take the needs of those with disabilities into account, one fifth (21%) of people in the UK have a disability<sup>128</sup> and so may be at more risk of being involved in a pedestrian collision than their non-disabled counterparts. A Californian study found that people with learning disabilities were 2.8 times more likely to be killed in a pedestrian collision than the rest of the population.<sup>129</sup>

The risk for pedestrians with disabilities of being involved in a road accident is higher because:

- People with mobility impairments may cross the road slowly and may be at risk of a fall if the surface is uneven.
- Wheelchair users could be disadvantaged if the kerb is not dropped or if accessible routes are not available.
- A wheelchair user is also often lower than a standing adult and so may be less visible to motorists<sup>130</sup>.
- People with sight and hearing loss may be unable to anticipate other road users' actions. Children with undetected hearing problems could be at risk as the child and their carer do not recognise the need for extra caution.
- People with intellectual disabilities may be unable to make a good judgement about safety, such as when it is safe to cross the road. They may also behave in an unpredictable way.<sup>131</sup>

Groups representing the visually impaired, both in the UK and internationally, have raised concerns that due to their low noise levels, electric vehicles may pose an increased accident risk to visually impaired pedestrians<sup>132</sup>. However, European vehicle approval regulations will mandate sound generators on new types of electric and electric hybrid vehicles from 2019. Manufacturers may choose optionally to fit sound generators before this date. This will ensure that electric and hybrid-electric vehicles always produce a sufficient level of noise below 12mph and during reversing and the sound generator cannot be switched off by the driver. The European Commission has also agreed to undertake further research, including the role of safety systems. The outcome of this work will be used to determine how these systems can be used alongside sound generators in future<sup>133</sup>.

Groups representing pedestrians with special needs have also highlighted the dangers that pavement parking can pose. When vehicles are parked on pavements, those who are blind and partially sighted, with prams, wheelchairs or other road users may have to walk on the road rather than the pavement just to get by. A survey by Guide Dogs showed that 97% of blind or partially sighted people had faced struggles navigating due to street clutter and 90% of those had experienced trouble with a car parked on the pavement<sup>134</sup>.

The walking environment should be made safer for disabled pedestrians by:

- Tactile paving at the edges of steps and pavements and safe crossing places.
- Well-maintained, firm, flat and wide footways making the roads easier to navigate and safer to use for those with disabilities and mobility impairments.
- Avoiding unnecessary street 'clutter' such as advertising boards and bollards, particularly in the case of those who are visually impaired<sup>135</sup>. Trees and bushes should also be maintained, as overhanging foliage can present a challenge for those who are partially sighted.
- Tarmac, rather than paving stones, which reduces the risk of uneven surfaces and trips and falls, and makes the use of mobility scooters more comfortable and efficient<sup>136</sup>.
- Dropped kerbs to allow easier access for wheelchair users and;
- Safe crossings with signaling that can be detected by those with sight or hearing loss and longer crossing periods for people with mobility impairments to safely cross the road<sup>137</sup>.
- Puffin crossings are particularly useful for disabled children and adults who may cross the road more slowly than others may as they extend the crossing phase until the pedestrian has crossed the road<sup>138</sup>.



## Urban and Rural

Statistics show that the majority of pedestrian casualties occur on built-up roads (roads with a speed limit of 40mph or less). In Britain, young pedestrians living in urban areas were involved in crashes five times more frequently than those in rural areas were, and their death rate was twice as high<sup>139</sup>.

In urban areas, it is important to ensure that drivers' sightlines are clear so that they have a clear view of pedestrians waiting to cross or who have started to cross the road.

Rural roads can be particularly dangerous for pedestrians as they often lack pavements, street lighting and crossing facilities. Therefore, some of the road infrastructure measures mentioned above should be more widely implemented to reduce both urban and rural pedestrian collisions. It is also beneficial for pedestrians to plan a safe route to their destination, enabling them to avoid some of the common causes of collisions in these areas, such as roads with inadequate pavements or busy high-speed roads with poor crossing facilities.



## Routes

Busy roads with no safe crossing facilities and roads lacking a safe pavement are just a couple of the issues that can make a route unsafe for pedestrians and place them at risk of injury. Ways in which the road environment can be made safer and provide better routes for pedestrians include:

- Traffic calming measures to reduce the speed and volume of vehicles such as speed humps and cushions
- Zebra, puffin, pelican, toucan and pegasus crossings
- Central refuges and;
- Paths exclusively for vulnerable road users, such as cyclists and pedestrians<sup>140</sup>.

However, in some situations, despite measures being implemented to make roads safer, some pedestrians cannot identify safe routes. Analysis of child pedestrian accidents suggests that certain road structures and locations occur repeatedly as the location of pedestrian collisions. Common examples include children crossing the road when there are parked vehicles or roadside obstructions, hills, bends, hedges and near other pieces of street furniture, which may obstruct the child's view and other road user's view of them when crossing<sup>141</sup>. The study showed that younger children assumed that it was safe to cross the road if there were no cars visible, not recognising the danger the brow of hills and bends pose. Children often thought the safest place to cross was directly across the road from their 'target location', as they were advised to go 'straight across the road', taking this advice literally and not recognising that it implied they should spend as little time on the road as possible. The study showed that educational interventions could dramatically improve 5-year-olds' abilities to plan safe routes. This highlighted that for some children, further pedestrian training is needed and measures such as guardrails should be used to guide children to the nearest safe crossing facility. School crossing patrols can also help children to make safer decisions when crossing the road.

## Street Lighting

Driving outside daylight hours is more dangerous. Only a quarter of travel by car drivers is between 7pm and 8am, yet this period accounts for 40% of fatal and serious injuries to the same group.<sup>142</sup> Night-time travel is one of the greatest risk factors for pedestrians. Many pedestrian collisions occur in the first hour of darkness.<sup>143</sup> Lighting also affects people's perceptions of safety. Pedestrians often avoid unfamiliar streets, deserted public spaces and dark underpasses if they believe they are at risk of harm or assault in these locations. This means that they may choose to take a route or cross a road in a location with higher traffic risk. In both Mexico and South Africa, reasons for avoiding crossing facilities included a lack of lighting at night and a perceived threat of assault.<sup>144</sup>

Street lighting promotes a sense of safety in urban areas and so increases the quality of life by artificially extending the hours in which it is light so that activity can take place. A study found that three quarters (73%) of respondents agreed that 'better street lighting would improve the safety of children' and two-thirds (63.8%) agreed that 'improved street lighting would lead to fewer accidents on the roads'. However, since this study, there has been a trend to either switch off or dim street lighting.<sup>145</sup>

Research also found that lighting can reduce pedestrian collisions as increasing the intensity of lighting allows drivers to see pedestrians at night. An Australian study reported a 59% reduction in pedestrian collisions following an improvement in lighting.<sup>146</sup>

A study<sup>147</sup> led by researchers from the London School of Hygiene and Tropical Medicine carried out in 2015 analysed 14 years of data from 62 local authorities who had implemented light reducing measures. The study concluded that there was no evidence of an association between reduced street lighting and night time collisions. A further study



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undertaken by the same academic body looked at public perception surrounding street lighting and conclude that there was little evidence that the introduction of part night lighting had made significant differences to wellbeing other than residents' feeling of personal security<sup>148</sup>.

### Vehicle Design and Technology

Developments in vehicle design and technology can improve pedestrian safety. Traditionally, vehicle safety has tended to focus on improving the protection that a car can offer to an occupant, but increasingly, vehicles are being designed to be safer for pedestrians by reducing the likelihood of collisions with them and reducing the severity of any collisions that do occur.

Ultimately, this is likely to result in the introduction of “driverless” cars, but in the meantime, cars will become more and more autonomous but still require a driver to be in control. These technologies are evolving rapidly as autonomous technology is developed and trialled. Some of the technology that is likely to offer protection to pedestrians include:

- Intelligent speed adaptation (ISA) to support drivers' compliance with the speed limit.
- Autonomous emergency braking (AEB) that uses sensors to detect the risk of hitting a pedestrian and braking the vehicle to prevent it
- Vulnerable road user detection and alert systems
- Lane Departure warning systems
- Safer Bonnet design to reduce the likely severity of injuries to any pedestrian who is hit.<sup>149</sup>

European legislation, Pedestrian Protection Regulation 78/2009 and General Safety Regulation 2009/661 has been introduced to ensure that all cars offer some level of protection.

There will be a transitional period in which there will be mix of conventional cars, cars with increasingly sophisticated advanced driver assistance systems such as adaptive cruise control and autonomous vehicles. It is important that policy and regulations are designed to ensure that this type of technology works effectively and reliably and to facilitate their safe use. It is crucial that the development of autonomous vehicles, and the legislation governing them, takes account of pedestrian safety.

Specific and clear advice for drivers to help them understand that they will need to remain in full control of their vehicle when using these technologies will be needed.

Automated vehicle technology is developing rapidly and will profoundly change the way we drive, ultimately to the point where in fully automated vehicles the driver will be just a passenger. This technology offers enormous potential to reduce crashes and casualties, enable better use of road space, and improve mobility for people who are unable to drive conventional cars.

It is not yet clear when people will be able to purchase or use a truly driverless car, but estimates are that it could be any time from the mid-2020s onwards. However, some forms of autonomous vehicles, such as cars that can be parked by remote control, or pilot themselves with human oversight on high speed roads, will be available for sale in the next two to four years.



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### Cyclists and Pedestrians

Although most cycling takes place in areas of high pedestrian activity, it is important to note that the vast majority of pedestrians who are killed or injured in reported collisions are hit by a motor vehicle rather than a cycle. In Great Britain, from 2007 to 2016 cycles were involved in on average three pedestrian fatalities a year and 82 serious injuries, representing around 0.6% of pedestrian fatalities and 1.5% of serious injuries, whereas motor vehicles are involved in 67.5% of pedestrian fatalities and 81% of serious injuries<sup>150</sup>.

One concern of pedestrians is cyclists who ride on the pavement. Pavement cycling is illegal, unless it is on a shared cycle/pedestrian path or shared space. Pavement cycling can be a barrier to walking and is particularly intimidating to vulnerable pedestrians<sup>151</sup>. When asked, many cyclists say they ride on pavements because of the danger posed by traffic on the road. However, some recognise that this is inconsiderate to pedestrians and would dismount in busy areas.<sup>152</sup> This potential conflict between pedestrians and cyclists could be solved via more investment in cycling infrastructure, which could encourage less cyclists to ride on the pavement. In 2016, 43 pedestrians died in collisions involving a vehicle on the footway or verge; however, none of these involved a cyclist<sup>153</sup>.





## Improving Road User Behaviour

Although infrastructure can improve the safety of all road users, most road crashes are at least partly, and sometimes mainly, caused by human error, which can range from simple mistakes and misjudgements to deliberately dangerous and illegal behaviour. Creating a safer pedestrian environment will also help to improve the behaviour of all road users, by making it easier for them to behave responsibly and safely.

Education (including training and publicity) and enforcement are also key approaches to improving road user behaviour, and to helping everyone share the road safely together. However, all road users, including pedestrians, cyclists and drivers, must also take responsibility for their own choices and behaviour.

### Improving Driver Behaviour

#### Enforcement

One of the most effective ways of improving pedestrian safety is reducing vehicle speed. Unfortunately, many drivers exceed the speed limit, or drive within the limit, but too fast for the conditions. In 2016, 53% of car drivers and 56% of light commercial vehicles were observed exceeding the 30mph speed limit. On 20mph limit roads, 81% of cars and 80% of light commercial vehicles were observed exceeding the speed limit<sup>154</sup>. Therefore, compliance with the speed limit needs to be improved through enforcement and education measures, as well as through road design measures as discussed earlier.

National Speed Awareness Courses are often offered to drivers caught exceeding the speed limit, in place of three penalty points and a £100 fine. The course aims to identify the benefits of complying with speed limits, understand the consequences of speeding, explore the advantages and disadvantages of speeding, improve knowledge of speed limits and skills in identifying different speed limit areas and recognise personal responsibility for choice of speed.

An evaluation of the scheme showed that the speed awareness course produces changes in psychological predictors of speeding, including affective attitudes, moral norms, self-efficacy and intentions and results suggested that the course makes clients more likely to drive within the speed limit. At follow up, 99% of clients reported that they had applied what they had learnt on the course and 91% reported that they had not had trouble in doing so. Focus groups also suggested that the course had achieved its effects through three mechanisms: challenging clients' attitudes towards speeding, giving them an insight into their own driving and the pressures that they face and enabling them to apply what they have learnt.<sup>155</sup>

A recent evaluation of the effects of the National Speed Awareness Course on re-offending rates that participation in the course was more effective at reducing speed reoffending than a fine and penalty points over a period of 3 years. Between 12% and 23% of drivers who attended a National Speed Awareness Course were less likely to reoffend within six months of committing their first offence. This fell to 9-17% within 12 months, 9-11% within the first two-years, and 6-13% within three years.<sup>156</sup>



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### Driver Training

Once they have gained their full driving licence, few drivers take any further driver training, unless they are required to do so as part of a court or police scheme or their employer. There are many options available, ranging from quick and easy courses on specific issues or skills to longer courses leading to full advanced driving tests. However, one of the most difficult challenges is to raise awareness of the existence and benefits of refresher driver training. Most drivers do not feel they need refresher training, never think about it, or are not aware of its benefits.<sup>157</sup> Few formal evaluations of post-test driver training have been conducted to determine their effectiveness, but studies have shown that advanced driver training can improve situational awareness more generally.<sup>158</sup>

### Improving Pedestrian Behaviour

The most common contributory factors attributed to pedestrians are 'failed to look properly', 'careless, reckless or in a hurry' and 'failed to judge other persons path or speed'.<sup>159</sup> Other common factors are pedestrian crossing the road near a stationary or parked vehicle (meaning another road user did not see them) or using a pedestrian crossing facility incorrectly.

There are also instances in which pedestrians are distracted by using a mobile phone or listening to music through earphones. A survey in 2014 found that as many as one in seven pedestrians admitted crossing the road without looking when their phone distracted them. 31% also admitted that their mobile phone distracted them from looking for traffic on the roads.<sup>160</sup> Pedestrians distracted by phone conversations or other activities are more likely to take greater risks when crossing the road.<sup>161</sup> A study found that in a simulated pedestrian environment, those distracted by listening to music or texting were significantly more likely to be hit by a virtual vehicle whilst crossing the road than those who were undistracted. Those distracted by talking on the phone, texting or listening to music also looked away from the street than the undistracted group.<sup>162</sup>

### Pedestrian Training

Pedestrian casualties increase as children grow older and become more independent as pedestrians. Road safety education and training for children at Key Stages 1 and 2 should be conducted in real-road environments, not solely in a classroom or playground and should cover modern-day scenarios, such as distraction by mobile phones or MP3 players while walking, and crossing between parked vehicles.

Road safety officers sometimes support schools in delivering road safety education to pupils and other road safety organisations deliver road safety education to children and young adults. Living Streets also provide resources and support to help schools to deliver road safety education and 'Walk to School' assessments, which can identify risks in the local area and identify strategies to tackle them.<sup>163</sup>

Training should be a combination of practical exercises and classroom learning, which can include models, theory and discussion. Road safety should also be taught as a spiral programme across all key stages in a way that ensures that what has been learnt is revisited, reinforced and extended in an age-appropriate way.<sup>164</sup>

For children aged under five, it may be more appropriate to use role-play and teach children about road safety on the premises, rather than taking them out and teaching them at the roadside. This could include using the playground and marking out roads and kerbs for children to practice on.<sup>165</sup> They should be given the opportunity to learn about:

- The difference between the footpath and the road
- How to walk with a grown-up who they know and hold hands near a road
- Be introduced to 'Stop, Look, Listen and Think'
- Be introduced to safer crossing places



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For children aged five to six, training should include encouraging the child to begin to make decisions about the safest place to cross the road while supervised. At this stage, as with younger children, training should include one supervisor to two children to ensure that each child has an adult's hand to hold. Training at this stage should allow children to learn about:

- How pedestrians walk on the pavement and vehicles travel on the road
- How to walk with a grown-up who they know and hold hands when walking near the road
- Safer crossing places and how to use them
- The Stop, Look, Listen and Think sequence
- How to walk safely

When children reach the age of seven, up to the age of 11, they should be beginning to practice the green cross code, as they should have already learned about this in school. For this age group, there should be a supervisor to every six children, with no less than two supervisors present at any one time. As some of the older children are likely to be beginning to make independent journeys, training should focus on making safe choices when travelling, regardless of influences such as peer pressure.<sup>132</sup> Children should have the chance to learn about:

- The Green Cross Code and how to put it into practice, recognising safe crossing places on the road
- Road signs and pedestrian crossings
- The Highway Code and rules of the road
- Planning a safe journey to high school

A number of pedestrian training schemes have been evaluated, including the 'Stepping Out' scheme for seven to nine year olds in Staffordshire.<sup>166</sup> This scheme consists of teacher led classroom discussion, including worksheets, DVDs and the chance to discuss road safety, a 60-90 minute practice walk, where children can learn a route near to their school with a road safety officer followed by an observed walk normally after about a week, assessing the skills children have learned during the scheme. The evaluation showed that children increased their knowledge of road safety and this was sustained three months after the scheme was completed. It also showed that they were able to put their newly acquired road safety knowledge into practice. During the assessed walks, children showed safe pedestrian behaviour and were able to explain the reasons for their choices. Teachers said that children could remember the main messages of the programme and after the training, parents reported that their children were more aware and alert to road safety dangers such as cars pulling out of driveways.

An early pedestrian scheme, Kerbcraft,<sup>167</sup> for five to six year olds helped children to recognise safe roadside locations, cross safely between parked cars and near junctions. The judgements and road safety behaviours of trained children improved substantially and this was maintained two months after training. The differences between the trained and untrained children were significant, but only if the children had received at least four training sessions for each skill. Interestingly, children trained by community volunteers achieved the same changes in behaviour, meaning that the use of community volunteers could be a less resource intensive way to deliver the programme.

To support public health priorities, such as obesity and air pollution, it is important that road safety initiatives promote active travel choices like walking. With the peak times in the number of child pedestrians killed or seriously injured being the traditional "school-run" periods of 8-9am and 3-4pm, schemes that seek to teach road safety skills and reduce car journeys have the potential to make a particularly useful contribution.<sup>168</sup>



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Pedestrian training could be seen as the beginning of a lifelong cycle of road safety training that also encompasses cycle training, pre-driver education, the learning-to-drive process and “refresher” or further driver training throughout life.

It is important to highlight opportunities where accident prevention could make a positive contribution to other aspects of health improvement, or vice versa. Schemes such as Transport for London STARS,<sup>169</sup> Modeshift STARS,<sup>170</sup> and Transport for London’s Young Travel Ambassadors scheme,<sup>171</sup> encourage walking and cycling, and encourage families to make journeys by foot, bicycle or scooter. Since 2013, three quarters of participants have agreed or strongly agreed that they have become more aware of their safety on the roads.

### **Personal, Social, Health and Economic (PSHE) education**

School based education can help young pedestrians to acquire the knowledge needed to keep themselves safe while walking. Road safety is not specifically part of the national curriculum, but is often taught in Personal, Social, Health and Economic education (PSHE). A 2015 survey of teachers suggested that 70% of primary schools and 55% of secondary schools had taught PSHE in the last 12 months.<sup>172</sup> Pedestrian skills training programmes have been shown to improve children’s skills, such as timing and finding safe places to cross, if they are specifically targeted (at particular road safety skills).<sup>173</sup>

The contribution of PSHE education to students’ health, safety and wellbeing should be reinforced by a strong statutory curriculum.<sup>174</sup> Children and young people need age-appropriate opportunities to develop the capability to keep themselves and others safe, being able to recognise hazards, assess the risks and benefits of an activity and manage the risks to themselves and others.

Improving the safety of child cyclists and child pedestrians can encourage greater participation in these activities, contributing to the health benefits of an active lifestyle and fewer vehicles on the road.<sup>175</sup> There are also links between accidental injury and other public health issues associated with risky behaviours, such as alcohol or drug use, which should be explored.<sup>176</sup>

A “learning about safety by experiencing risk”<sup>177</sup> approach to safety education is to be encouraged, giving children the opportunity to develop their skills through practical activities. Visits to permanent practical safety education centres or participation in interactive safety schemes, can increase children’s awareness of key risks. For example, research into the impact of children’s visits to such schemes found that children who had experienced safety education improved their recognition of a variety of risk hazards<sup>178</sup>.

While some subjects include teaching about the specific hazards and risks involved in a particular activity (for example, science, PE, art and design), a statutory PSHE requirement to engage children in developing more general hazard perception and risk management skills (“risk literacy”) would ensure that the health and wellbeing needs of pupils are given appropriate status alongside their academic needs. It would also open up opportunities for teacher training programmes to cover this topic.

RoSPA welcomes the recent publication of the [Think! Road Safety Education resources](#) for parents, teachers and schools, many of which are designed to support pedestrian education and training.



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### Improving visibility

Pedestrians also need to be aware that other road users may not see them in low light conditions, particularly if they are wearing dark clothing. It is advised that pedestrians select light coloured clothing and add reflective material to backpacks, shoes and clothing to make themselves more visible to other road users<sup>179</sup>. The Highway Code states that pedestrians and cyclists should wear or carry materials to improve their visibility to drivers at night and in poor light conditions.

### Impairment

Pedestrians should also be aware of the impacts alcohol can have on their safety. In 2016, a pedestrian was killed or injured when impaired by alcohol in 1,349 accidents<sup>180</sup>. Alcohol consumption, whether on the part of the vehicle driver or a vulnerable road user such as a pedestrian increase the likelihood of a crash, the severity of injury and the odds of death<sup>181</sup>. Alcohol impairs a pedestrian's judgement and cognitive function as they navigate the road environment, meaning their perceptual, cognitive and physical skills can be impaired to the extent that they are unable to cross the road safely in complex urban environments. They are much more likely to engage in risky behaviours including crossing against a signal or not using designated crossing facilities<sup>182</sup>.



## Conclusions

Walking has positive and tangible health and societal benefits, and there are very strong reasons for enabling more people to walk more often and more safely.

In Great Britain, the level of walking is decreasing, but pedestrian casualties have fluctuated, rising in some years and reducing in others, with no clear trend apparent. Therefore, we all face a crucial challenge, which is to create safer walking conditions so that more people are encouraged to walk and so that more walking does not lead to more pedestrian casualties.

Improving the safety of walking will reduce the number of pedestrian casualties and encourage and enable more people to walk more often. It will help people who want to walk, but are deterred from doing so because they think it is not safe enough, and help to prevent the increase in walking resulting in an increase in pedestrian casualties. This, in turn, will increase the health and environmental benefits of walking for those people who walk and for society as a whole.

RoSPA strongly supports measures that encourage healthy and sustainable travel, and believes that the key to increasing walking (and so gaining all the health and environmental benefits that result from walking) is to create a safe environment and to produce safer vehicles that reduce the risk to pedestrians. Pedestrian safety measures should also include training, education and enforcement programmes that work together with the engineering measures to provide an environment that maximises protection for all vulnerable road users.

RoSPA advocates the Safe System Approach, which involves designing roads and vehicles to minimise the risk of crashes occurring, and ensure that when they do occur, they are unlikely to result in death or serious injury.



## Recommendations

Based on the evidence in this paper, RoSPA recommend a number of measures to improve pedestrian safety:

- A further adoption of the Safe System approach throughout Great Britain
- A national design standard for roads should be developed to ensure that all schemes are delivered to a set safety standard
- Rather than repairing individual potholes, a more cost effective solution could be to re-surface the whole stretch of road
- Where average speeds are below 24mph, 20mph limits can be introduced. However, the layout of the road must give the clear impression that a 20mph speed or below is most appropriate. Where 20mph limits are introduced, they should be supported with education and publicity to ensure driver compliance.
- Walking routes should be adapted to be made continuous, direct and join up residential areas, commercial areas and schools
- Research to establish the provision and benefits of school crossing patrols should be conducted.
- The contribution of PSHE education to students' health, safety and wellbeing should be reinforced by a strong statutory curriculum. Children and young people need age-appropriate opportunities to develop the capability to keep themselves and others safe, being able to recognise hazards, assess the risks and benefits of an activity and manage the risks to themselves and others. A 'learning about safety by experiencing risk' approach to safety education is to be encouraged, giving children the opportunity to develop their skills through practical activities.



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