

Road Safety Factsheet

October 2020

Electric Scooters (e-scooters)

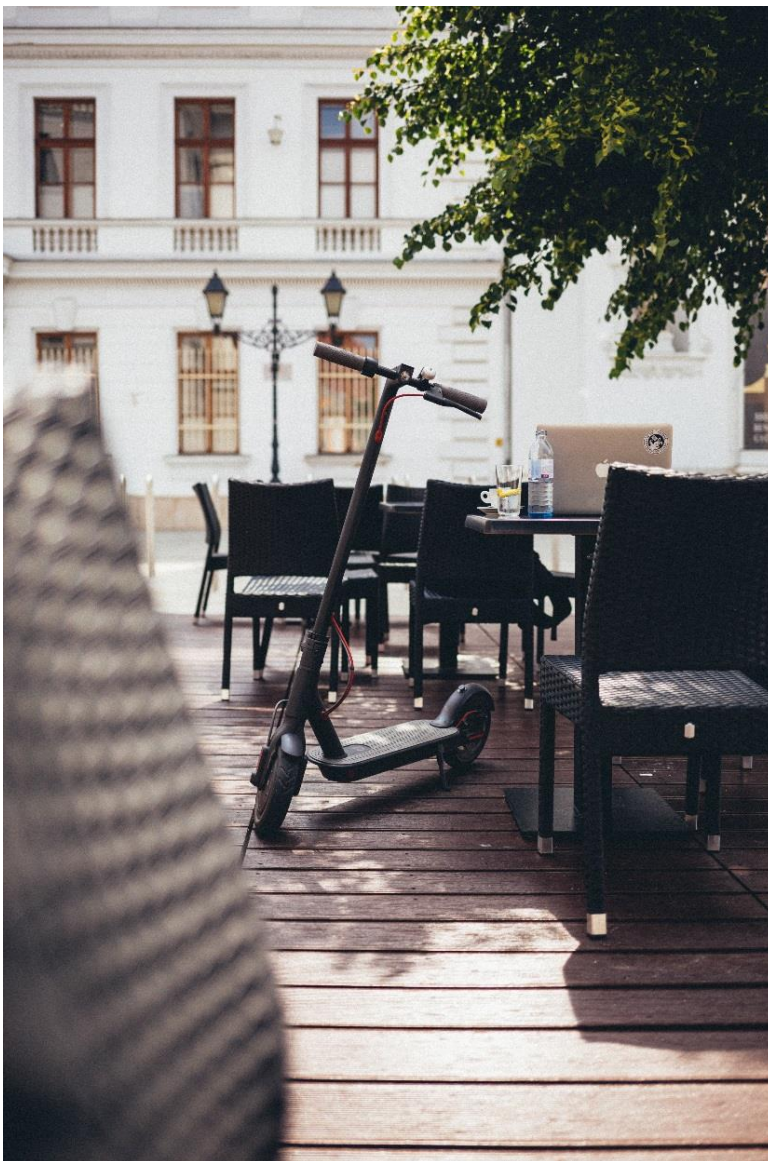


Figure 1: An electric scooter (E-scooter).

What are e-scooters?

E-scooters, despite looking much like a standard two-wheeled scooter, have been fitted with rechargeable batteries to make them electrified.¹⁻² Users of e-scooters stand upright with both hands on the handlebar. E-scooters are slightly slower than electric bikes (e-bikes) with speeds ranging from 9mph to 15mph, and they allow users to control their speed with acceleration and braking functions on the handlebar, also known as “twist and go”.¹

E-scooters are rising in popularity due to factors such as a reduction in the user’s carbon footprint, better mobility around congested cities, and saving money, especially when compared to classic modes of transportation such as the car.³ E-scooters can be purchased privately, however the massive growth in e-scooter use can be explained by “sharing schemes”, in which users can collect an e-scooter from various places across a city and pay to rent it for a short period of time using an app. These schemes are very popular both across Europe and in the US, wherein e-scooter rental companies have shot to success.⁴

The law

Private e-scooters

The DfT uses the term “powered transporters” to refer to motor-powered personal transport devices, including e-

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scooters.⁵ They are also known as Personal Light Electric Vehicles (PLEVs).² The Road Traffic Act 1988 states that a “motor vehicle” is “any mechanically propelled vehicle intended or adapted for use on roads”, which means private e-scooters fall under this definition and are subject to motor vehicle laws. These laws require motor vehicles to be taxed and registered, however PLEVs are exempt from these requirements, meaning private e-scooters fall into a grey area of the law.

Private powered transporters are illegal for use on pavements and footpaths and can only be used on private land with the owner’s consent. They cannot be ridden on the public highway; the user will be committing a criminal offence by using a private e-scooter on the road.⁵ More information about the laws surrounding powered transporters can be found [here](#).

Rental e-scooters

On July 4, 2020, new regulations were announced by the Transport Minister Rachel Maclean, allowing e-scooter trial schemes in England. The trials are designed to help understand whether e-scooters reduce motor traffic as well as their impact on safety for their users and others. Users must have a full or provisional licence.

The trialling of e-scooters has come about faster than expected. This is likely as a result of an increase in popularity of other modes of active travel such as walking and cycling. In May 2020 a £2 billion cycling and walking package was announced by the DfT, which will result in more cycle lanes and better use of road space.⁶ In recent years there has clearly been an increasing desire for e-scooter legalisation and overall improvements to active travel.

RoSPA’s responses to relevant consultations can be viewed at <https://bit.ly/2DeQ4QL>, <https://bit.ly/2BXTQh2>, and <https://bit.ly/3i274Zw>.

A few days before rental e-scooters became legal on GB roads, the government released the [E-scooter trials: guidance for local areas and rental operators](#) guidelines.⁷ These guidelines outline the fact that the e-scooter trials are intended to run for 12 months, with the possibility of an extension being built into the legislation. Also detailed are the changes to legislation that are required to introduce rental e-scooter trials, including the fact that rental e-scooters are to be treated very similarly to electrically assisted pedal cycles (EAPCs), however they will still be categorised as motor vehicles. Key points from the guidelines are as follows:⁷



Figure 2: An electric scooter (e-scooter).

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- E-scooters must be fitted with an electric motor that has a maximum power rating of 500W
- E-scooters must not exceed 15.5mph
- Rental companies must cover their e-scooters with a motor vehicle insurance policy
- Anyone riding an e-scooter must have at least a valid provisional driving licence
- Protective helmets are not required to be worn
- E-scooters are able to be used on the road and in cycle lanes/tracks

It is possible that these changes in legislation and the introduction of rental e-scooter trials could lead to the eventual legalisation of private e-scooters on public roads.⁸

E-scooter popularity

A 2004 study predicted that due to the problems associated with traditional motor vehicle use, new modes of transportation such as powered transporters would become increasingly attractive alternatives.⁹ This has turned out to be correct, particularly in the case of e-scooters. The combination of existing transportation companies expanding into e-scooters,¹⁰ as well as e-scooter startups, resulted in e-scooters appearing all over the world in 2018 in the form of sharing schemes.

E-scooter companies have been very successful in the US:¹¹ In 2018, 84 million trips were taken on shared micromobility in the US – more than double the amount of trips in 2017. The amount of trips taken on shared e-scooters surpassed that of shared bikes by 2 million.¹² The success of sharing schemes may lie in their simplicity – the entire process of finding an e-scooter and paying for a journey can be completed within a dedicated app, and at the end of the journey the scooter can often be left anywhere in the operational zone.¹³ E-scooters have also been successful across Europe, with popularity rapidly increasing in countries such as Paris, Switzerland and Germany.¹¹

E-scooters are not only popular with their riders. Some e-scooter rental companies allow individuals known as “Juicers” to collect e-scooters at night and charge them at their own residence, with the company paying them per scooter charged. There is concern that Juicers will negate some of the positive environmental effects of e-scooters – as they put larger vehicles on the road to collect more and more scooters to charge.¹

Benefits of e-scooter use

Micromobility devices such as e-scooters have the potential to solve some of the biggest issues facing urban mobility, as well as saving users money and allowing for easier access to transport due to their ease of use.³ The following are the key advantages of e-scooter use:

A reduction in carbon emissions

Traditional motor vehicles are inherently inefficient due to the fact they use lots of energy in order to pull their own weight – one kilowatt hour (kWh) of energy allows a petrol-powered car to travel less than a mile. When using an e-scooter, 1 kWh provides 80 miles of travel. Coupled with their reduced usage outputs due to an electric motor, they are much more energy efficient and environmentally friendly to use. Furthermore, e-scooters are energy efficient to manufacture due to their low weight.⁴

When the inefficiencies of motor vehicles are paired with congestion, a problem that is rife in cities, there is a huge environmental impact. The Royal College of Physicians estimate that deaths due to exposure to air pollution result in a social cost of £20 billion per year,¹⁴ and 80% of the concentration of nitrogen oxides

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(significant environmental pollutants) at the roadside are caused by road transport.¹⁵ According to the DfT, new types of travel such as zero emission mobility give the opportunity to transform our cities, making them greener and quieter, allowing people to “live happier, longer lives”.¹¹

Cheaper and more accessible travel

As well as being cheaper to purchase than traditional motor vehicles, micromobility devices do not depend on traditional fuels, allowing them to have much lower running costs. Therefore, devices such as e-scooters result in affordable travel, meaning more members of the population can access transport¹¹ – a large scale survey in the US found that lower-income groups were more supportive of e-scooter sharing services than the rest of the population.¹⁶ E-scooters are also more accessible in terms of the fact a licence is often not required to use them.⁷

There are conditions in which e-scooters cannot be used as a primary form of transport, such as when transporting children or travelling a long distance, however, it has been found that the driver is alone on 60% of trips in the US.³ Furthermore, it is more likely that e-scooters would be used as part of an individual’s commute rather than a single form of transport, such as for the “last mile” of a journey.¹⁷ In one study into the use of e-scooters in urban environments with 38 participants, it was found that they are appropriate for the majority of daily trips and the participants could incorporate them into their daily lives.¹⁸

Reduced congestion in cities

Motor vehicles, particularly cars, are incredibly popular in cities. With 74% of adults possessing a driving licence, and 87% of UK motorists agreeing that their current lifestyle requires a car,¹⁹ congestion is becoming a huge problem. As well as the serious environmental impact congestion is having, there is also an impact on the economy – the time lost due to congestion costs the UK economy approximately £2 billion every year.²⁰ The 2017 British Social Attitudes Survey found that 56% of respondents perceived congestion in towns and cities to be a serious or very serious problem.²¹ The use of micromobility devices such as e-scooters could make a significant difference to city congestion, particularly when used for the last part of an individual’s commute: 46% of US car traffic is caused by individuals on journeys less than 3 miles long.⁴



Figure 3: E-scooters could help us to tackle congested UK cities.

Disadvantages of e-scooter use, accident incidences & responses so far

Despite the benefits that e-scooter use brings, there is worry that their emerging use is posing a significant public health problem. The same design that makes e-scooters portable, light and efficient also makes them unsafe: they consist of a thin piece of metal between two small (8 inch) tyres with the user being just inches from the road surface, resulting in a significant risk of traumatic injury on the road.²² E-scooters are small, quiet and quick, meaning they present unique safety challenges, particularly when being considered for use on UK roads. 8 inch wheels are not appropriate for tackling pot holes, posing discomfort to the rider if not a major safety risk:

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between 2007 and March 2018, 400 cyclists were killed or seriously injured in the UK due to poorly maintained roads.¹ Such safety issues need to be considered as legislation begins to change in the UK.



Figure 4: Uncontrolled e-scooter sharing schemes have resulted in many injuries in the US. As legislation is changing, a similar situation could emerge in the UK if e-scooters are not properly integrated into the urban transport infrastructure.

The rapid rise in e-scooter popularity is resulting in a significant increase in casualty numbers. A 2020 report from the U.S. Consumer Product Safety Commission found that there were 7,700 emergency department visits associated with e-scooters in 2017, 14,500 in 2018 and 27,700 in 2019. It was also found that there was 1 fatality associated with e-scooters in 2017, rising to 5 fatalities in 2018 and 21 fatalities in 2019.²³

The Austin Public Health Department identified 190 e-scooter rider injuries in their city over just a 3-month period. 35% of these people sustained bone fractures, and 80 of the injuries were classified as severe. Only one of the 190 injured riders was wearing a helmet.²⁴ Keeping e-scooter users

safe is clearly a major concern. Rather like cycling, RoSPA believes that there needs to be a sensible balance between safety considerations and mandatory safety equipment, such as the mandatory wearing of helmets, which may put people off using e-scooters.

Some companies have been working towards improving e-scooter safety. Neuron Mobility, a startup e-scooter rental company originating in Singapore, utilises technology to improve the safety of sharing schemes as they expand, for example by using geofencing and an app-controlled Helmet Lock, which allows a safety helmet to be attached to the e-scooter and electronically released before the user begins their ride.^{25,26}

Since the introduction of e-scooter sharing schemes in France in 2018, it has been estimated that 15,000 of them have entered Paris.²⁷ The French transport minister stated that the introduction of e-scooters to France “happened very fast” and was “anarchic”, resulting in pedestrians being scared to walk on the pavements for fear of getting run over. Because of this and the fact e-scooters have caused accidents, their use on France’s pavements (except for in allocated areas) was banned in late 2019, with users facing a 135 euro fine for breaking the rules.²⁸ Some countries, including France, have changed their legislation to include e-scooter rules. Germany has introduced a minimum age of 14 for e-scooter use, as well as only permitting them on roads and cycle paths.²⁹

Another significant problem caused by e-scooters is street clutter and vandalism. This is because the e-scooters are “free-floating” and can be left almost anywhere, resulting in visual pollution, vandalism/abuse and obstructions on pavements and roads, causing pedestrian hazards.^{1, 30} Similarly to France, e-scooters were launched in a fast and uncontrolled manner in San Francisco, causing many complaints from pedestrians regarding congested streets and illegal parking. Some companies did not seek permission before deploying their devices. This resulted in a temporary e-scooter ban in May 2018 and the requirement that companies submit a business plan for ensuring safety and a lack of street clutter. Only a day after the ban was lifted, users were

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parking the e-scooters illegally and residents were knocking them over.³¹ Similar problems have happened in California, with extremely high levels of vandalism – in just one month, 60 scooters were dumped into one of the lakes.³² Some companies are working to solve these problems, for example by requiring that users take a picture of their parked e-scooter after their journey, or securing the scooter with a cable lock.³³

Further problems with e-scooters come with their design – they can only carry a small amount of baggage, and for many people, their use is dependent on weather conditions.²¹ Furthermore, the maximum speed of an e-scooter is very low compared to a car, meaning they are not as useful for longer journeys. In terms of private use, a lack of charging infrastructure in more remote areas, as well as the amount of time it takes to fully charge the scooter (5-18 hours³⁴) could be issues for buyers to consider.

Overall, e-scooters have the potential to provide an attractive solution to common urban mobility problems: they are cheap to run, reduce congestion levels and allow us to move away from using traditional fuels which have severe environmental implications. They also allow greater access to transport, especially in cities where it can be expensive and awkward to move around. However, with the uncontrolled introduction of sharing scheme e-scooters in various cities resulting in street clutter and rapidly increasing accident rates, the introduction of e-scooters in the UK must be carried out carefully and in consideration of the existing urban transport infrastructure.

RoSPA's position

RoSPA is pleased that e-scooters are being trialled on Great Britain's roads in a regulated and safety-aware manner before they become fully legalised, as e-scooters have the potential to pose a range of huge benefits including decreased congestion and improved public health. However, RoSPA is acutely aware that e-scooters pose a range of serious safety concerns and their usage is not without risk, as shown by the tragic loss of Emily Hartridge in 2019, Britain's first e-scooter fatality.³⁵

E-scooters can also pose a danger to other road users; with several campaigners already having spoken out about worries for pedestrians and those with disabilities.³⁶ Therefore, RoSPA hopes that any data obtained from the e-scooter trials will be closely monitored and any issues acted upon, so we can all experience the benefits of e-scooter use whilst minimising safety concerns.

In the UK, RoSPA advocates that e-scooter providers and local authorities involved in the rental trials should implement robust systems that swiftly identify when accidents and incidents have occurred. This is important to enable any issues, such as damaged or misplaced e-scooters, to be rectified quickly, and will also contribute to our collective understanding of e-scooter usage and incidents.

Providers and councils also need to recognise and minimise the opportunity for e-scooter users to misuse and ignore practical standards in the current trials. Good discipline by riders now will create a culture of good user behaviour in the future, and training opportunities for e-scooter riders are an important part of this, along with an encouragement that riders wear helmets.

Geofencing (putting a virtual perimeter around a real-world location) and identifying and preventing pavement riding are absolutely critical in the trials, to ensure that e-scooters are used and parked in a safe and responsible way. Trial operators must ensure that accurate plans and routes are created and implemented consistently for e-scooters, paying particular attention to low-speed zones and exclusion areas.

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Furthermore, if private e-scooters were to be legalised as a result of data obtained from the trials, RoSPA would like to see similar safety guidelines as well as strict requirements that e-scooter manufacturers must adhere to in order to get their scooters onto the road legally.

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