

Road Safety Factsheet

Electric Scooters (E-Scooters)

What are E-Scooters?

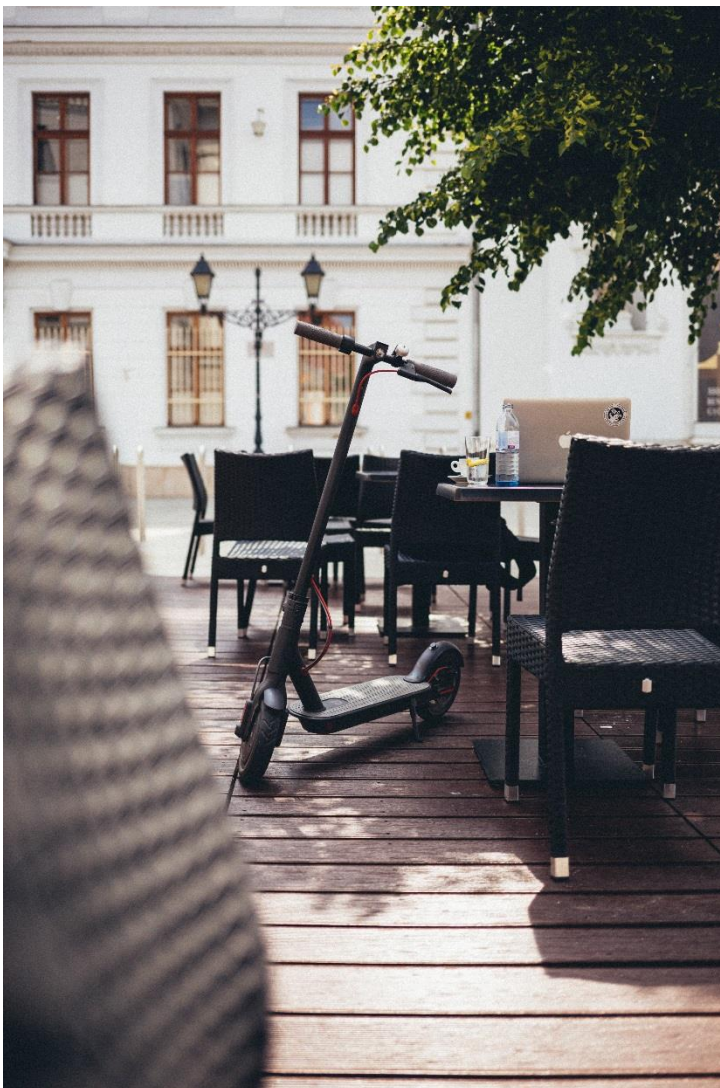


Figure 1: An electric scooter (E-scooter).

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 companies such as Bird and Lime have shot to success.⁴ The picture in the UK is very different, however, as E-scooters can only legally be ridden on private land. This is due to several factors, including the way the Department for Transport (DfT) classifies E-scooters, and the Highway Act 1835.⁵

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The Law

The DfT uses the term “powered transporters” to refer to motor-powered personal transport devices, including E-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 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 E-scooters fall into a grey area of the law.

Powered transporters are illegal for use on pavements and footpaths. To legally use a powered transporter on a public road, users have to comply with many difficult requirements, such as meeting particular technical standards and using relevant safety equipment. Because it is so difficult to meet all of the requirements, it is likely that the user will be committing a criminal offence by using an E-scooter on the road.⁵ More information about the laws surrounding powered transporters can be found [here](#).

Many people are frustrated with E-scooter laws and think they are outdated. High levels of pollution and congestion coupled with ever-increasing commute times means there is a call for innovation in this area of transport.⁶ Given the immense popularity of E-scooters in other parts of the world, there is increasing pressure on the UK not only to make E-scooter laws less confusing, but to change them altogether.⁷ The DfT’s Call for Evidence found that participants frequently mentioned micromobility (the use of small mobility devices, such as E-scooters) and requested a review which would investigate how new types of micromobility could be integrated into the urban transport system safely.⁸

At the start of 2019, it was reported that the government was going to change current traffic laws, stating as they are a “barrier to innovation”.⁹ Although it was reported that the DfT stated there are no plans to do this,¹⁰ the recently published “Future of Mobility: Urban Strategy” document stated that a review on micromobility is a priority for 2019, which could result in micromobility devices being trialled on the road.¹¹

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.¹² This has turned out to be correct, particularly in the case of E-scooters. The combination of existing transportation companies such as Uber and Lyft expanding into E-scooters,¹³ and startups such as Bird and Lime 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, with Bird operating across 30 cities.¹⁴ In 2018, 84 million trips were taken on shared micromobility in the



Figure 2: A Bird E-scooter.

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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.¹⁵ 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 be left anywhere in the operational zone.¹⁶ E-scooters have also been successful across Europe, with popularity rapidly increasing in countries such as Paris, Switzerland and Germany.¹⁴

E-scooters are not only popular with their riders. Companies like Bird and Lime allow individuals known as “Juicers” to collect E-scooters at night and charge them at their own residence, with the E-scooter 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,¹⁷ and 80% of the concentration of nitrogen oxides (significant environmental pollutants) at the roadside are caused by road transport.¹⁸ 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.¹⁹ E-scooters are also more accessible in terms of the fact a license is 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.²⁰ 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.²¹

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Reduced Congestion in Cities

Motor vehicles, particularly cars, are incredibly popular in cities. With 74% of adults possessing a driving license, and 87% of UK motorists agreeing that their current lifestyle requires a car,²² 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.²³ 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.²⁴ 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.²⁵ 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: between 2007 and March 2018, 400 cyclists were killed or seriously injured in the UK due to poorly maintained roads.¹ A similar picture may emerge if E-scooters were to be allowed on UK roads.



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

Since late 2017 in the US, 8 people have died whilst riding a sharing scheme E-scooter,²⁶ 1500 people have been estimated to have sustained an E-scooter related injury,²⁷ and 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.²⁸ Rather like cycling there needs to be a sensible balance between safety considerations and mandatory safety equipment, such as the

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mandatory wearing of helmets, which may put people off from using E-scooters. This should be considered in any future review of UK legislation.

Some companies have been working towards improving E-scooter safety – scooter sharing company Lime spent \$3 million on their Respect the Ride scheme, which encourages users to “take the pledge” to ride E-scooters safely and responsibly. The scheme focused on ensuring users wear a helmet – Lime distributed 250,000 free helmets across the world and included helmet use as one of their pledges.²⁹

Since the introduction of E-scooter sharing schemes in France in 2018, it has been estimated that 15,000 of them have entered Paris, with 40,000 more set to enter by the end of 2019.³⁰ 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, the use of E-scooters on France’s pavements is being banned in September 2019, with users facing a 135 euro fine.³¹ Some countries, including France, are changing their legislation to include E-scooter rules. Germany is set to introduce a minimum age of 14 for E-scooter use, as well as only permitting them on roads and cycle paths.³²

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.^{1,25} 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 parking the E-scooters illegally and residents were knocking them over.³³ 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.³⁴ Some companies are working to solve these problems: Bird requires that users take a picture of their parked E-scooter after their journey, and Scoot asks users to secure theirs with a cable lock.³⁵

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 hours³⁶) 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, paired with complicated UK law and the requirement for new legislation, it could be some time until we see E-scooters being used successfully in the UK.

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