

Written evidence submitted by the Parliamentary Advisory Council on Transport Safety (PACTS) (ESF0015)

1. Summary

Nearly two and a half years since the Transport Select Committee published their report *E-scooters: pavement nuisance or transport innovation?* The Parliamentary Advisory Council for Transport Safety (PACTS) welcomes this new inquiry.¹ Our remit is transport safety and our evidence is primarily in relation the safety of e-scooter riders and other road users.

PACTS has carried out extensive research into the safety of e-scooters. In March 2022 we published [The safety of private e-scooters in the UK](#).² We withheld comment on the rental trials until the Department for Transport published the evaluation report. With support from The Road Safety Trust we are now providing a critique.

Our key learning from this work, summarised in this submission, has been that:

- Between 2019 and 2022, 31 people died in incidents involving an e-scooter. These people would almost certainly not have died had they continued to travel as they did previously.
- The rental trials evaluation report provides a significant data source and some understanding of the safety of e-scooters. For example, findings show that the casualty rate for e-scooters is over three times that of pedal cycles. However, important gaps remain. We believe that more data could have been published and more analysis undertaken.
- The evaluation report does not assess the safety of private e-scooters which significantly outnumber those available in the trials and have been involved in 27 of the 31 fatalities.
- From police records and hospital data, e-scooter riders are most likely to be injured in single vehicle collisions (the rider falls rather than being in a collision with another road user). Head and facial injuries are common.
- Limiting speeds to 12.5mph, regulating for wheel sizes of a minimum of 12inches (30cm) and making helmet wearing mandatory would improve safety for e-scooter riders and other road users. Other countries are including such requirements in their regulations.

- Legislation for private e-scooters should be set appropriately. Private e-scooters are not the same as rental e-scooters nor are they the same as pedal cycles.
- Most riders choose an e-scooter in place of walking, cycling or using public transport. This has implications for road safety and active travel with potential consequences for public health and the NHS.

We urge the Committee to consider the extent to which the conclusions and recommendations set out in its 2020 report have been met, based on the evidence of the rental trials and its current inquiry.

We also recommend the Committee press the Government to consider two key issues:

1 How should e-scooters be regulated in order to best ensure safety for users and pedestrians?

2 Given the findings on safety and mode shift, should e-scooters be promoted by the government?

2. About PACTS

The Parliamentary Advisory Council for Transport Safety (PACTS) was formed in 1982 by parliamentarians and experts from a range of disciplines who had amended what became the Transport Act 1981 to make seat belt wearing compulsory.

Today, PACTS is the only NGO which:

- addresses transport safety (road, rail and air) across the UK;
- focuses on parliament, government and key stakeholders;
- has a wide membership base across the modes and the public, private and third sectors;
- has no commercial or sectional interests.

It provides the secretariat to the All-Party Parliamentary Group for Transport Safety.

PACTS is a founder member of the European Transport Safety Council (ETSC) and continues to be one of its most active members.

More details about PACTS can be found on our website [here](#).

PACTS has carried out extensive research into the safety of private e-scooters. Our work has included:

- collating casualty data for the UK for 2021, and for all fatalities involving e-scooters since 2019,
- gathering evidence to inform understanding of the safety of private e-scooters, including the collation of evidence from the use of rental e-scooters in England and elsewhere,
- forming recommendations for regulations for the safe construction and use of private e-scooters,
- critiquing the Department for Transport evaluation report into the rental e-scooter trials, and;
- investigating the extent of under recording of e-scooter casualties.

3. General overview of e-scooter use in the UK

As the Committee noted in its first report (para 129), the rental trials, which opened in July 2020, should provide a crucial evidence base for future legislation on e-scooters including providing valuable information on the impact of e-scooters on safety. The delayed publication of the DfT evaluation report in December 2022 provides some insights into the first 18 months of the trials, to the end of December 2021. The trials are now due to continue until the end of May 2024 indicating that nearly 30 months of additional data should be available.

The publication of the evaluation report, and its supplementary data, provides an indication of the extent of use. The rental trials started with 37 scooters in July 2020. 4,000 were available in January 2021 and 23,000 in December that year.³ Over 18 months, across 32 trial areas in England 14.5 million rides were made by 1.4 million users. Across the period of July 2020 to December 2021 the net import of private e-scooters into the UK was approximately 800,000 units.⁴

In the minds of the public there is confusion about the legal status of e-scooters. Private e-scooters are legal to buy but, in effect, illegal to use on public roads in the UK. There is an onus on retailers to make customers aware of the legal situation but some retailers are showing only token responsibility. In addition, the Metropolitan Police Service have raised concern that where council-approved rental e-scooters are in operation there is confusion for the

public about private use.⁵ This is echoed by forces elsewhere. In our view the police are often left in an impossible position. PACTS has called on the government to do more to inform the public and to tackle irresponsible retailing.

Rental trial e-scooters

Through the e-scooter rental trials, registered individuals with a driving licence have been able to hire an insured e-scooter, with a capped speed of 15.5mph or less, which can be ridden on roads and cycle lanes (it is illegal to ride them on pavements). The devices must meet a number of different requirements including conformity with technical standards, licensing, and registration. Riders are expected to meet standards of use and are recommended to wear appropriate safety equipment.⁶

From these operator-owned and maintained e-scooters and through operator-apps, data covering demographics, location and extent of use, rider experience, including collisions, and also helmet wearing is collected. Riders have an obligation to report any injuries they sustain.

Private e-scooters

Private e-scooters are unlike rental e-scooters in both their construction and use. They are legal to buy, with minimal certification to demonstrate their safe construction. They can be used only (with permission) on private land. It is illegal to ride a private e-scooter in public places including roads, pavements, parks or cycleways.

Private devices are not fitted with the geofencing control of no-go or go-slow areas or onboard diagnostics afforded by the rental e-scooters. There are no standards to be met for their safety or performance. While some are inexpensive and of poor quality, others may be better built and some devices can exceed 50mph. There is no traceability of users and limited ability for enforcement authorities to penalise riders for irresponsible behaviour. The extent of use exceeds that of the rental schemes (which are limited to England) and in the evaluation report 'it is recognised that private use is widespread'.

4. Safety

The Committee recommended (para 59) that "the Department should closely monitor the number and type of collisions that occur during the e-scooter rental trials."

Within the evaluation report it is noted that “gathering reliable safety data was a challenge for the evaluation, recognised by the police and other local stakeholders, who were involved in safety discussions.” However, collisions involving e-scooters are recorded by others. They are included in the regularly reported road casualties for Great Britain and some extracts of this data have been used in the rental trial evaluation reports. Operators record incidents involving rental e-scooters and these are reported to the DfT by the operators or local authorities in situation reports. These have not been referenced in the evaluation report. Hospital data can provide further information into the number of casualties and the nature and severity of their injuries. The evaluation report does provide some qualitative information from interviews with a subset of users and residents.

Casualty data

Official data of reported road casualties is available for Great Britain from the DfT published e-scooter factsheets for the years 2020 and 2021.^{7,8} These were prepared using police reports where free text data against a STATS 19 reportable accident led to the identification of involvement of an e-scooter. This method of identification is less robust than if a designated vehicle type were available. With adjustments made to account for police injury-based reporting the data for Great Britain shows for the years 2020 and 2021:

Numbers recorded by the DfT in their reported road casualties for Great Britain	2020		2021	
	Count	Percentage	Count	Percentage
collisions involving e-scooters	460	100%	1,352	100%
collisions involving only one e-scooter with no other vehicles involved (single vehicle collision)	83	18%	324	24%
casualties in collisions involving e-scooters	484	100%	1,434	100%
casualties in collisions involving e-scooters who were e-scooter users	384	79%	1,102	77%
fatalities from collisions involving e-scooters	1	0%	10	1%
seriously injured casualties	129	27%	421	29%
slightly injured casualties	354	73%	1,003	70%
casualty suffering serious injury was another road user	22	5%	90	6%

Casualty data in the evaluation report is based on casualties reported to the police (STATS19) for six of the approximately 30 areas where trials were underway in 2021. These areas were selected because differentiation was made between rental and private e-scooter involvement. The records of the 300 casualties within these six areas show slightly more casualties were involved in a collision with a rental e-scooter than with a private e-scooter.⁹ The report excluded analysis of the STATS19 data from which the severity of injuries, nature of collisions, age ranges of casualties etc. could have been gleaned.

To inform the evaluation report surveys were carried out with 6,864 of those users and 3,620 residents, both groups distributed across ten of the trial areas.¹⁰ References to collisions witnessed or in which an interviewee was involved are made, however those who suffered serious injuries were removed from the results.

Of the residents who completed the survey, 18% had been involved in a collision with an e-scooter while being another road user or had witnessed a collision. Of these 59% had been injured themselves and 39% had seen someone else injured. There is no analysis of the nature or severity of the injuries sustained in the collisions and it is not possible to determine how the those injured were travelling at the time of the collision.

From the evaluation report's e-scooter user survey reports of e-scooter collisions did not, typically, involve other road users. 82% of those who reported being involved in a collision in the last 12 months said that no other vehicles or pedestrians were involved. Four percent said that a pedestrian had been involved in the collision, but no details of the level of injury to these other road users was recorded. Situation reports do record some pedestrian injuries where the e-scooter rider did not stop. STATS19 data for 2021 shows 16% of casualties in collisions involving an e-scooter were pedestrians.¹¹

The evaluation report found that the casualty rate (per mile) for rental e-scooter users was three to four times that for pedal cyclists. This is alarming. (We had expected the casualty rate for rental scooters to be lower than private users, but this may not be the case.) While the data are not perfect, they are consistent with findings from other studies. A comparison with cyclists is not necessarily most relevant as most rental users would have walked or used public transport where casualty rates are much lower.

Perceptions of safety

e-scooters have been splitting opinion in the general public, frequently over the issue of safety. These concerns are reflected in the evaluation report survey findings. Less than a third of residents, across all age groups, felt people riding e-scooters were respectful of pedestrians. Residents who walked felt safest around pedal bicycles and least safe around e-scooters. This was also the view of those who drove other motor vehicles or travelled by pedal cycle.

Even among e-scooter users safety is a matter of concern. From surveys of user perceptions included in the evaluation report, overall, users felt a rental e-scooter was less safe than other modes of transport, except mopeds and motorcycles. This result is not surprising: those who tried them and felt them unsafe, or those who did not use them at all because of safety concerns, would not have been included.

Further sources of data

From the trials further data should be available from situation reports. These reports are regularly populated by the operator or local authority in each trial area and made available to the DfT. These provide details of the number and severity of reported injuries, made by riders or other members of the public. They also include reference to antisocial behaviour, damage and, in some cases, near misses. No data from the situation reports is included in the evaluation report, nor are they referenced as a potential but discounted source of data.

We are aware of two local authorities which are due to publish their own reports in spring 2023 which will include records from the police, from the operator and also from hospitals.

Hospital records provide details e-scooter casualties. The Royal College of Emergency Medicine (RCEM) ran a nationwide survey during four weeks across October and November 2021.¹² From the 20 hospitals which took part in the study 250 patients presented with injuries from a collision involving an e-scooter. Just under 5% were other road users (pedestrians or cyclists). 68% fell from their e-scooter and 14% hit a stationary object. 12 of the 20 hospitals had an active rental trial during the time of recruitment. There the mean number of patients presenting was 19.4. In hospitals without a rental trial scheme in their area, the mean number of patients presenting was 5.3.

In mainland Europe, where e-scooter use has been available for longer, hospitals records show that head injuries are prevalent, followed by injuries to the upper limbs. Other road users are injured and these are most often pedestrians and cyclists.

Since July 2019, PACTS is aware of 31 deaths involving e-scooters in the UK. For example, in 2021 we have records of thirteen deaths from collisions involving e-scooters.¹³ The three additional deaths were excluded from the STATS19 records either because they occurred away from the public highway or were recorded sometime after the collision. However, as they all occurred on public ground, they are still important for understanding the safety of e-scooters.

5. Legislation and regulations

Focus on “developing and implementing a sensible and proportionate regulatory framework for legal e-scooter use, drawing on lessons from other countries, and ensuring that potential negative impacts on pedestrians and disabled people are avoided” was a recommendation made by the Committee in 2020 (para 16). Elsewhere regulations have been drawn up to govern the construction as well as use of e-scooters. Although some elements may match those used for pedal cycles there not every country treats e-scooter in the same way. Laws are being modified as there is greater understanding of e-scooter safety.

e-scooter legislation in Europe

Standards for the construction of e-scooters are set in EN 17128: 2020, the type c (product) standard for Personal Light Electric Vehicles (PLEV). This voluntary standard has been developed by the European Committee for Standardisation and has been taken into law by some governments. There are no common standards for use. However, by following EN 17128: 2020, most European countries have set a capped speed of e-scooters to 25km/h or below.

While regulations in some countries were initially like those for pedal cycles, amendments are being made to align e-scooters more closely with motor vehicles. Limits on power, use on pavements, age restrictions and the need for insurance vary. At least 12 countries including Denmark, Spain, Greece and Finland have a compulsory helmet requirement either for children, under 18s, or all adults. The creation of a new category of motor vehicle has been mooted in France.¹⁴ As such e-scooters would need to obtain type approval (they

would need to meet specified performance standards) and their riders would need to comply with specific regulations.

In Germany e-scooters are now classified as a new category of motor vehicle and must be type approved. Riders are required to have insurance and all e-scooters should have a maximum speed of 20km/h and power of 500W. A regularly updated list of the key e-scooter rules in different European countries is provided by PACTS sister organisation the European Transport Safety Council (ETSC).¹⁵

e-scooter construction

Within the overall rules set by the DfT for the rental trials, and any conditions specified by the local authority, operators have varied the speed, power, weight and wheel size of their fleet. The evaluation report notes that wheel size, suspension and stability affected perceptions of safety. For example, small wheels were said by users to make the e-scooter feel more likely to topple, and many users considered suspension could be improved. The report does not provide details of the variations in e-scooter construction between operators nor of any quantitative analysis of these variations.

The Committee's published recommendation is that the speed of e-scooters should be suitable for the local environment they are deployed in (para 71). Regardless of where they are used the speed of an e-scooter has an impact on the safety of the rider as they are a vulnerable road user. They are not protected by a vehicle body in the same way car users are and, therefore, are particularly susceptible to injuries. Other vulnerable road users are at more risk of serious injury if struck by an e-scooter at greater speed. Recommendations from medical professionals and academics are for speed limits to be limited to 20km/h.^{16,17}

Within the rental trials speed limits range from 10mph to 15.5mph with the majority set at 12.5mph or less. Some areas have go-slow zones limiting the speed further. The speed of a private e-scooter can be limited by hardware (motor size and power) or software. Speeds can exceed 50mph.

Acceleration of an e-scooter to top speed is directly related to its power. Within a recent study it was found that the controls were found to operate either 'on' or 'off' making variation of speed difficult.¹⁸ From the evaluation report, some users felt that the e-scooter accelerated too easily and was hard

to control. Residents expressed concern about the dangers posed by the speed and acceleration of e-scooters to users.

Evidence from testing of e-scooters supports rider perceptions and shows that users are at risk of falling due to instability. Larger wheels make e-scooters more able to withstand surface defects therefore increasing stability and control.¹⁹ Operators taking part in the rental trials have developed their e-scooter designs to increase wheel size since the trials began in 2020.

The evaluation report draws attention to users concerns over their safety due to potholes and uneven road surfaces. However, equally, it might be concluded that this could be improved through development of scooter design or construction. It should be noted that it is unlikely that road surfaces are going to improve in the near future or extensive segregated provision be made.

e-scooter use

The Committee recommended that helmet use should be encouraged (para 90). Within the short-term rental trials helmets were provided with all rental e-scooters in two locations. Results from the user survey suggest larger proportions used these helmets where they were provided than did elsewhere, where a user had to supply their own helmet. Not having a helmet made some users feel less safe. For part of the evaluation period long term rental users in West England Combined Authority and Essex were provided with a helmet. Extent of use of a helmet in these areas is not provided in the evaluation report.

The evaluation report explains that further encouragement to wear a helmet included providing financial incentives and in-app messaging. Social norms and the perception that no one else wore a helmet were important influences on helmet use.

The Committee recommended that the use of e-scooters should not be at the detriment of pedestrians, particularly disabled people, and that pavement use should be discouraged (paras 99 & 131). The results in the evaluation report show that 6% of users surveyed did not know they could not use e-scooters on pavements. 22% admitted that they do use e-scooters on pavements. 25% of users surveyed use e-scooters in pedestrianised streets and areas. Use of e-scooters on the pavement impacted the perception of safety for resident when walking. 64% of residents aged 55+ reported never or rarely feeling safe on the pavement around e-scooters, compared to 22% of residents aged 18-34.

Concerns about pavement riding were particularly pronounced among people with mobility issues and blind or partially sighted participants. This has been echoed by organisations representing these groups.²⁰

In the evaluation of the rental trials some residents and stakeholders expressed concern that, by riding on the road within other faster vehicles, e-scooter riders were at risk and felt vulnerable. This was shown in the user survey results which documented that most (87%) of those who rode on the pavement reported doing so because of traffic or features of the road.

Enforcement of the pavement riding ban is proving difficult with geofencing technology in its infancy. Operators or local authorities provide means for members of the public to report e-scooter users who are on the pavement using the unique identification number added to each e-scooter. There is no stipulation on where these plates are located nor their size. As this varies across the fleets it is impacting the degree of accountability of the riders. In the evaluation report, some users reported making a conscious effort to stop using pavements after receiving alerts from operators warning against this. The number of issued warnings is not included within the report.

In addition to use of the pavement, local authorities have adopted either docked or dockless pavement parking in their rental trial areas. Groups representing the disabled, and others, have raised their concerns over the impact this has on those using the already cluttered space. Situation reports log incidents which have occurred on the pavement recording collisions, falls and illegal riding.

e-scooters and pedal cycles

e-scooters and pedal cycles differ in their construction, performance and safety outcomes. Pedal cycles, require the rider to pedal to move forward, e-scooter riders can accelerate to their maximum speed within only a few seconds. The wheel size and the location of the centre of mass has implications on the stability of a pedal cycle or e-scooter. The larger wheels of a pedal cycle and more centrally located centre of mass make it more stable than an e-scooter especially when navigating changes in the road surface.

Comparing the casualty rates between transport modes is helpful for understanding relative safety. The rental trials provide a valuable opportunity to compare rental e-scooters with pedal cycles. The evaluation report records that the casualty rate (casualties per million miles) for rental e-scooters (based

on mileage logged by operators) was 13, while it was 3.9 for pedal cycles (based on the DfT national travel survey data for 2021).

6. Mode shift

The Committee recommended that, in line with Government initiatives, active travel should be promoted and any uptake of e-scooter use should be in place of private car journeys (para 34). The evaluation report records that, in December 2021, 42% of users reported that they would have walked if they had not taken an e-scooter on their last trip, 21% would have travelled by private transport (car, van or taxi), 18% would have travelled by public transport (bus, train, tube or tram), 10% would have cycled, and 9% would not have made the journey at all.

Elsewhere in the evaluation report the casualty rate for e scooters is recorded. This is much higher than for walking or public transport – the main modes that people would otherwise have used.²¹ e-scooters were mostly used for short journeys; the average distance travelled was 2.2km and lasted for 14 minutes, Over the trial period, implied average speeds ranged from four mph in July 2020 (6.4kmh), to seven mph (11kmh) in December 2021. Others have also found that a prominent factor in deciding to use an e-scooter was speed and journey time.²² Although an e-scooter may be quicker than walking the same journey, these journeys could have been in a similar time to cycling. This would have enabled the users to gain from the health benefits of physical exercise. Instead over half the rental e-scooter trips replaced active travel with a consequent negative health impact.

7. Conclusions

e-scooter use in the UK has grown significantly since the introduction of the rental trial schemes in July 2020. Those trials enable the collection of a breadth of data to inform the understanding of the use and safety of e-scooters. The publication of the evaluation report has provided some insights, however details, in particular of e-scooter collisions, have not been released. PACTS believes that further evaluation of the extensive data available from the rental trials would be valuable in relation to improving the rules for future rental schemes and to formulating regulations for all e-scooters.

e-scooter use is controversial, both in the UK and abroad. Other European countries are legislating to address safety concerns for riders and pedestrians. In Paris, a referendum will be held in April on whether they should be banned in the city entirely.²³

In May 2022 the then Secretary of State for Transport told the Committee that the Government intended to legalise use of e-scooters (private and rental). Safety was to be at the heart of the plans. However, there now seems little prospect of completing legislation and regulation before the general election and it is not being demonstrated that safety is a priority. The unsafe and unsatisfactory situation that we have described above looks set to remain for some years. PACTS urges the Committee to press the Government to get a grip.

PACTS also recommends the Government consider two key issues:

1. How should e-scooters be regulated in order to best ensure safety for users and pedestrians?
2. Given the findings in the Evaluation report on safety, mode shift and active travel, should e-scooters be promoted by the government?

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Endnotes

¹ [Third Report from the Transport Select Committee, Session 2019-21, 's 20 September 2020 report, *E-scooters: pavement nuisance or transport innovation?*, HC 255'](#)

² Winchcomb, M, [The-safety-of-private-e-scooters-in-the-UK-Final-Report](#), PACTS 2022

³ National Evaluation of e-scooter trials on behalf of DfT - Operator Data, available in December 2022 with the [National evaluation of e-scooter trials report](#)

⁴ obtained from HMRC import figures, based on Trade Data code HS 87116090

⁵ [Response from Metropolitan Police Service to Prevention of future deaths report 2022-0400](#)

⁶ E-scooter trials: guidance for local areas and rental operators - GOV.UK (www.gov.uk)

⁷ [Reported road casualties Great Britain: e-Scooter factsheet 2020 - GOV.UK \(www.gov.uk\)](#)

⁸ [Reported road casualties Great Britain: e-Scooter factsheet 2021 - GOV.UK \(www.gov.uk\)](#)

⁹ [National Evaluation of E-scooter Trials Technical Report, Table 13, DfT, Dec 2022](#)

¹⁰ [National evaluation of e-scooter trials, findings report, DfT, December 2022](#), The user and resident surveys, were administered in ten trial areas. Among these ten trial areas, five were selected as case studies in which qualitative interviews and focus groups with users, residents and local stakeholders were conducted.

¹¹ [Reported road casualties Great Britain: e-Scooter factsheet 2021 - GOV.UK \(www.gov.uk\)](#)

¹² [An observational Study of E-scooter impacts upon ED in the United Kingdom, SEED-UK, TERN Research](#)

¹³ [Log of e-scooter fatalities in the UK maintained by PACTS](#)

¹⁴ New moped category in traffic code created in France - Bike Europe, bike-eu.com

¹⁵ ETSC - National e-scooter rules in Europe:

<https://docs.google.com/spreadsheets/d/14oxJ4KOWbrTsRFYeNGQb65GHTTniQ0Ob1d5QqC4SKT8/>

¹⁶ [Pepper, T., Barker, M., Smyth, D. et al. Electric scooters: a quick way to get to the emergency department?. *Br Dent J* **232**, 535–537 \(2022\)](#)

¹⁷ [Posirisuk P, Baker C, Ghajari M, *Computational prediction of head-ground impact kinematics in e-scooter falls*, Accident Analysis & Prevention, Volume 167, 2022, 106567, ISSN 0001-4575](#)

¹⁸ [Eyers V, Parry I, Zaid M, *In-Depth Investigation of E-Scooter Performance*, TRL, January 2023](#)

¹⁹ [Posirisuk P, Baker C, Ghajari M, *Computational prediction of head-ground impact kinematics in e-scooter*](#)

falls, Accident Analysis & Prevention, Volume 167, 2022, 106567, ISSN 0001-457

²⁰ [Guide Dogs UK, Scoot Aware. The effect of e-scooters on people with sight loss, May 2022](#)

²¹ [Webster E and Davies D, *What kills most on the roads*, PACTS report 2020](#)

²² [Sherriff, A, Blazejewski, L and Lomas, M, E-scooters in Greater Manchester, 2022](#)

²³ [Was the \\$5bn that VCs plugged into scooters worth it? | Sifted](#)