



Finding a place for the e-cargo bike: The parking and insurance practices of owners in Ireland

Robert Egan^{a,b,*}, Hannah Julienne^b, Brian Caulfield^a

^a Centre for Transport Research, Department of Civil, Structural and Environmental Engineering, Trinity College Dublin, Ireland

^b Behavioural Economics Unit, Research and Policy Insights, Sustainable Energy Authority of Ireland, Ireland

ARTICLE INFO

Keywords:

Cycling
E-cargo bike
E-bike
Parking
Insurance
Practice theory
E-vélobility

ABSTRACT

E-bikes and e-cargo bikes can 'extend' the practice of cycling, reducing the physical demands of cycling further, cycling faster, cycling in varied topography and weather, and cycling with passengers and goods. However, while e-cycling can moderate the demands of cycling and expand its functional capabilities, it can also introduce new physical and technical competences. The competences of parking may be particularly intensified. The higher values, additional components, and heavier weights of an e-cycle can mean greater and more complex use of locks, more cautious placing, and more laborious manoeuvring. In this qualitative study, we explored e-cargo bike owner experiences and practices of parking in the context of Ireland. We found that participants struggled to find a place that was a secure and convenient to park their e-cargo bikes. This struggle shaped their everyday mobility, constraining how and where the e-cargo bike would be used. In this paper, we conceptualise the dominant parking styles that participants adopted at home, at work, and in public, to enable secure and convenient e-cargo bike parking: *standing out*, *official anchoring*, *improvised anchoring*, and *locking away*. In addition, we provide an analysis of *insurance measures* adopted by participants to safeguard the e-cargo bike in the instance of damage or theft, and how insurance measures – and the absence of insurance – can structure parking styles. To conclude, we make several observations on cycle parking planning that could help to advance more e-cargo-bike-inclusive cycle parking futures in the context of Ireland.

1. Introduction

E-cargo bikes (ECBs) have been identified as vehicles with significant potential to decarbonise the urban transport of goods (European Commission, 2022, 2023). In the context of Ireland, e-cargo bikes have equally been identified as potential substitute vehicles to the private car (Department of the Environment, Climate and Communications, 2023). While studies to date have primarily focused on the logistics applications of e-cargo bikes (Narayanan and Antoniou, 2022), increasing research attention is being paid to private e-cargo bike uptake and use (Edberg, 2023; Marincek et al., 2024; Philips et al., 2024; Thomas, 2022). In this paper, we contribute to this emerging area of study, qualitatively exploring the e-cargo cycle parking and insurance practices of 25 e-cargo bike owners in Ireland. To our knowledge, this study is largest qualitative study to date exploring the experiences and practices of private e-cargo bike owners and constitutes the first dedicated qualitative analysis of private e-cargo cycle parking in the field.

Our paper proceeds as follows. First, we review research that

investigates how e-bikes and e-cargo bikes influence passenger mobility behaviour and cycle parking, changing the competences of everyday cycling. Second, we describe our methodology for the study, in which data were collected using qualitative interviews and analysis was guided by grounded theory approaches. Third, we present our findings. We conceptualise four e-cargo bike parking styles for *finding a place* and describe how insurance measures were adopted in the context of finding a place. Fourth, we discuss the findings of the study in relation to existing e-cycling and cycle parking literature. On the basis of this discussion, we argue for greater consideration of the unique challenges of e-cargo bike parking in Ireland. We provide several observations regarding the planning ECB-inclusive cycle parking. These may help to improve the security and convenience of e-cargo bike parking at everyday destinations, thereby expanding the potential for this mode to substitute private car journeys.

* Corresponding author at: Centre for Transport Research, Department of Civil, Structural and Environmental Engineering, Trinity College Dublin, Ireland.
E-mail address: eganr5@tcd.ie (R. Egan).

<https://doi.org/10.1016/j.jcmr.2025.100078>

Received 7 March 2025; Received in revised form 20 May 2025; Accepted 4 July 2025

Available online 8 July 2025

2950-1059/© 2025 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

2. Background

A growing body of scholarship has investigated the ways in which e-cycles may change the experiences and practices of everyday cycling. This research can provide insight into how e-cargo cycles as e-bike variants might transform or maintain what might be considered ‘typical’ aspects of cycling experience and practice. In one respect, e-cycles can be seen to ‘extend’ the practices of cycling (Johnson and Rose, 2015; Rérat, 2021). Numerous studies have found that e-cycling can reduce the physical demands of cycling hilly routes (Dowling and Maalsen, 2020; Thomas, 2022; Wild et al., 2021) and of cycling in different weather conditions (Behrendt, 2018; Dill and Rose, 2012; Edberg, 2024; Popovich et al., 2014). In the Californian study of Popovich et al. (2014), for example, e-bike owners described how they used their e-bikes in hot and windy weather as e-cycling did not require the same level of exertion as non-assisted cycling in these conditions, while also making hills much easier to climb. In contrast, the studies of Wild et al. (2021) and Thomas (2022) suggest that cyclists can take less direct, experientially safer routes when e-cycling that may be avoided if cycling conventionally, due to the physical demands of hills and increased distance.

The electric pedal-assistance of e-bikes has equally been found to enable journeys of greater length, speed, and cargo compared to non-electric cycling, reshaping the plausible ranges and functions of cycling as a transport mode (Dill and Rose, 2012; Johnson and Rose, 2015; Jones et al., 2016; Melia and Bartle, 2022; Popovich et al., 2014; Thomas, 2022). For example, In Norwegian studies of trial e-bike use (Fyhri and Fearnley, 2015) and e-bike ownership (Fyhri and Sundfør, 2020), e-bike access was associated with longer distance and more frequent cycling. Similarly, respondents in the study of Johnson and Rose (2015) reported switching from a standard bicycle to an e-bike to cycle farther distances while some also engaged in a more cargo-carrying journeys such as shopping, due to the enhanced cargo potential of the e-bike. The studies of Dowling and Maalsen (2020) and Wild et al. (2021) found that e-cycling – including with e-cargo cycles – was particularly suited for parents transporting their children due to the reduced physical demands relative to conventional cycling.

Overall, these studies have shown how the unique electric-assist technologies of e-cycling may reconfigure the difficulty and accessibility of particular cycling practices relative to conventional cycling, such as cycling longer distance journeys or cycling with substantial cargo. How the ‘technologies’ (Behrendt, 2018) of e-cycling may change the practices of cycling can be helpfully understood by drawing on the concepts of Social Practice Theory (Shove et al., 2012). Concerning this study, the concept of *competence* is of particular use: the skill, know-how, or ability required to perform a given social practice. The competences of a given practice can be shaped by both the *materials* of given practice – such as the bicycle type available or the transport space one may use – and the *meanings* of a given practice – such as the bicycle being understood as a viable transport mode for cargo-carrying journeys. While the materials of e-cycling may reduce the competences of cycling further, faster, and heavier, in a range of weather and topographical conditions – and alter the meanings of what cycling can be used for – e-cycling may also introduce new or intensified competences compared to conventional cycling.

First, the e-cycle battery – with its finite battery life – introduces technical competences around predicting one’s battery use for a given journey (Edberg, 2024; Popovich et al., 2014) and planned charging (Edberg, 2023, 2024; Gruber et al., 2014). Across various studies, e-cyclists raised concerns regarding the reliability of e-cycle batteries when travelling particular distances in varied conditions, also referred to as ‘range anxiety’ (Behrendt, 2018; Dill and Rose, 2012; Edberg, 2023, 2024; Popovich et al., 2014). This can arguably be contrasted with ‘range anxiety’ for conventional cycling, which is indicated by e-cyclist concern with the reliability of their physical energy and fitness to complete a particular journey with a standard bicycle (e.g., Jones et al., 2022). ‘Range anxiety’ with e-cycling is particularly significant as, due

to the heavier weight of an e-bike compared to a conventional bike, cycling an e-bike without the pedal-assist may require greater physical exertion than conventional cycling (Behrendt, 2018; Edberg, 2024; Popovich et al., 2014) – which may be exceptionally challenging if cycling a loaded e-cargo cycle (Thomas, 2022).

Second, the e-cycle and its unique technologies can introduce added competences relative to conventional cycling in the practice of parking. The much higher cost of an e-bike or e-cargo cycle relative to a conventional bike can exacerbate the perceived likelihood of theft (Dill and Rose, 2012; Melia and Bartle, 2022; Popovich et al., 2014) and the extent of loss in the event of a theft (Edberg, 2023; Jones et al., 2016; Melia and Bartle, 2022; Popovich et al., 2014; Thomas, 2022). These factors can lead to the use of more substantially protective, and additional, locks when parking an e-bike or e-cargo cycle (Edberg, 2023; Popovich et al., 2014; Thomas, 2022) – thereby increasing both the potential materials (i.e., the possible use of more expensive, heavy, and additional locks) and competences (more complex and laborious locking routines) for parking an e-cycle relative to a standard bicycle. The e-cycle battery, due to its relatively simple removal for some models and considerable cost to replace (Edberg, 2023; Melia and Bartle, 2022; Popovich et al., 2014), is an added security consideration that can be an extra component to lock when parked (Edberg, 2023; Popovich et al., 2014) – or to carry (Edberg, 2023).

Furthermore, alongside the potentially increased materials and technical competences for cycle locking – or *how* one parks their e-cycle in a given location – several studies indicate the potentially greater competence for choosing *where* one parks their e-bike relative to a conventional cycle as part of broader e-cycle parking practices (Edberg, 2023; Popovich et al., 2014). E-cargo cycle studies indicate that having adequately spacious and secure storage at home is of major importance for e-cargo cycle ownership (Edberg, 2023; Marincek et al., 2024; Thomas, 2022). This suggests e-cargo cycle parking at home requires more materials than e-bike parking (such as a garage). Furthermore, existing public cycle parking provision can be highly incompatible with design of e-cargo cycles (Marincek et al., 2024; Thomas, 2022), indicating a greater competence for parking securely and without obstructing others.

Third, due to the battery and motor technologies of e-cycles, the weight this can add relative to conventional cycles may intensify the physical competences required for e-cycle parking (Dill and Rose, 2012; Edberg, 2023; Jones et al., 2016, 2022; Popovich et al., 2014), making the lifting (Dill and Rose, 2012; Jones et al., 2016; Popovich et al., 2014) and stabilisation (Jones et al., 2022) of one’s e-cycle more physically demanding. Participants in the study of Melia and Bartle (2022) have also pointed out that the weight of an e-bike can make multi-modal journeys that require lifting one’s cycle onto public transport a greater challenge along with negotiating steps at rail stations, while off-road cycle infrastructures that may require the physical handling of one’s cycle (due to gates, steps and kerbs) may be less accessible to e-cyclists, particularly disabled e-cyclists.

On the basis of this existing research, there is evidence that the unique materials e-cycling may introduce and intensify competences of cycling in relation to battery life and charging, securely parking one’s cycle (and acquiring the materials that may be required to achieve this), and physically lifting and manoeuvring one’s cycle. In the context of emerging private e-cargo bike research (Edberg, 2023; Marincek et al., 2024; Philips et al., 2024; Thomas, 2022) and broader scholarship exploring “the practices, systems and technologies of e-cycling” (Behrendt, 2018, p.67) – or *e-vélobility* – our paper is first dedicated qualitative exploration of the specific parking practices of private e-cargo bike owners. Our analysis provides a unique, empirically-grounded conceptualisation of how the materiality of e-cargo bikes can radically reshape the competences (and potentials) of cycle parking, and how e-cargo bike parking can rely on the parking systems of automobility (Urry, 2004) and *vélobility* (Cox, 2019).

3. Study context

In Ireland, approximately 2 % of journeys are made cycling. This contrasts with much higher trips shares made car-driving (69 %) and walking (19 %) (National Transport Authority, 2023). Cycling accounts for a larger share of trips for men (3 %) compared to women (1.3 %) in Ireland (Central Statistics Office, 2022), and is more common for trips made in cities than in towns or rural areas (National Transport Authority, 2023). In Ireland's highest cycling context, Dublin, there is a very limited protected cycling network (Conway et al., 2019), although the investment in expanded networks where cycle traffic is segregated from motor traffic has increased dramatically in recent years to stimulate mode shift (Department of the Environment, Climate and Communications, 2023; Department of Transport, 2021; Dublin City Council, 2024).

A great deal of cycle parking provided in Ireland comprises on-street "Sheffield Stand" facilities (National Transport Authority and Department of Transport, 2023, p.177), while there is evidence of increased off-street public cycle parking provision by local authorities (Dublin City Council, 2024). The National Transport Authority (n.d.) supports workplaces in Ireland to improve their active transport facilities, including cycle parking. Unique design requirements for cargo cycle and adapted cycle parking facilities are recognised in Ireland's Cycle Design Manual (National Transport Authority and Department of Transport, 2023, p.173) and there is evidence of some provision of dedicated facilities to date (Dublin City Council, 2024). In Images 1, 2, and 3 displayed below, we provide examples of on-street and off-street cycle parking provision in Dublin.

While data do not appear to be available for e-bike and e-cargo bike specific trips, recent data indicate that approximately 2 % of households in Ireland own an e-cycle of some kind. By comparison, 44 % of households in Ireland own a non-electric cycle (National Transport

Authority, 2023). In this way, private e-cycling likely accounts for a small share of total cycling trips in Ireland at present. However, evidence from the Irish market demonstrates a growth trend in e-cycle sales. For 2023, e-cycles made up 18 % of cycle purchases (Statista, 2024). For commuting trips, the cost of purchasing an e-cargo cycle can be reduced through the 'Cycle to Work' subsidy, offering reductions of up to €3000 (Revenue, 2024).

4. Methodology

Qualitative interview data were collected for this study. Recruitment involved the use of online advertisements. These were shared on various social media and through a popular cycling journalism provider (Ginty, 2024a), calling for e-cargo cycle owners who were based in Ireland to participate in a semi-structured qualitative interview. In total, 25 participants were recruited and 23 semi-structured interviews were conducted. The majority of interviews (N:21) were carried out with individuals, while a minority (N:2) were carried out with couples who shared a private e-cargo cycle. The sample demonstrated an approximate gender balance, with 13 women and 12 men participants, in contrast to the Irish cycling gender gap (Central Statistics Office, 2022). Participants were aged between 30 and 60 years of age and Dublin was the main county of residence (N:12). 24 of 25 participants were parent to at least one child, and all had prior experience utility cycling before owning an e-cargo bike. Several types of e-cargo cycle were used by participants: box-bikes, where cargo is placed to the front (N:11, Image 4); long-tail bikes, where cargo/passengers are carried primarily to the rear (N:12, Image 5); and box-trikes, which function the same as box-bikes but have two front wheels (N:2). We present basic information about each participant in Table 1.

We used grounded theory to undertake the study (Glaser and Strauss, 1967). In Fig. 1, we display our grounded theory process (Glaser and Strauss, 1967). For the 'open coding' phase of the study, we used semi-structured interviews to gather data on e-cargo bike purchase, mobility, and parking: the general 'problem area' of our study (Glaser and Strauss, 1967, p.45). These early data were analysed using grounded theory 'open coding', in which provisional categories and properties were developed inductively from initial patterns identified in the data (Glaser and Strauss, 1967). During this phase, we were open to extant research exploring e-cycling and cycle parking and to Social Practice Theory (Shove et al., 2012) as a way of thinking about the data. This body of literature provided 'sensitising concepts' (Charmaz, 2014, p.30) to aid the analytic process throughout the study (Thornberg, 2012).

Following intensive open coding, *finding a place* was identified as a dominant concern and practice of study participants. This category captured the styles enacted by participants to park their e-cargo bike securely and conveniently. Having identified this pattern – a provisional 'core category' – our analysis moved from the 'open' coding phase to the 'selective' (Glaser and Strauss, 1967) coding phase. During this phase, interviews were structured to gather data that specifically related to *finding a place* and its variations (e.g., exploring participant ECB parking experiences, practices, and conditions), while analysis became orientated toward theoretically refining and developing *finding a place* and its sub-categories, which we cover in detail in the findings section of this paper. Data collection and analysis concluded when the variations developed for *finding a place* fit a comprehensive body of data incidents and worked as theoretical constructs to make sense of the diverse ways in which e-cargo cyclist participants acted to resolve their concern with finding a secure and convenient place to park their e-cargo bike. In other words, 'theoretical saturation' had been achieved (Glaser and Strauss, 1967).

While Social Practice Theory (Shove et al., 2012) is not directly incorporated into our findings section, where we instead privilege our inductive concepts, we use it as a conceptual tool to interpret our findings in the discussion section. This research was ethically approved by University Research Ethics (REAMS No: 3134).



Image 1. On-Street Bike Parking.



Image 2. On-Street Cargo Bike Parking.



Image 3. Off-Street Bike (and Cargo Bike) Parking.

5. 'Finding a place' to park the e-cargo bike

Finding a place to park one's e-cargo bike that offered both security and convenience emerged as a main concern for private e-cargo bike users in this study. Participants relayed widespread fears of placing their e-cargo bikes in public spaces, resonating with existing private e-bike and e-cargo bike research (Dill and Rose, 2012; Edberg, 2023; Jones

et al., 2016; Marinček et al., 2024; Melia and Bartle, 2022; Popovich et al., 2014; Thomas, 2022). Theft was considered a disastrous outcome for many, who cited the high costs of their e-cargo bike and their reliance on it as one of their primary modes of everyday transport. Many participants had either replaced a second household car with their e-cargo bike or used it entirely as a car alternative, and so had structured their lives around it. However, perceived risks went beyond e-cargo bike



Image 4. Box E-Cargo Bike.



Image 5. Long-tail E-Cargo Bike.

theft itself, encompassing the feared theft of expensive and difficult to replace parts (see also, [Edberg, 2023](#); [Jones et al., 2016](#); [Melia and Bartle, 2022](#); [Popovich et al., 2014](#)), damage from attempted theft, vandalism or graffiti, and accidental damage from motorists.

Risk perceptions of parking the e-cargo bike were shaped by expert and local discourses – such as bike suppliers, social media videos, and neighbourhood WhatsApp groups – along with personal experiences of cycle theft. Similar to [Edberg \(2023\)](#), perceptions of risk were geographically specific. For participants in counties where very few people had e-cargo bikes, theft risk was considered relatively low due to the recognisability of the e-cargo bike in the community. Participants based in Dublin equally drew comparisons between their local areas and areas of Dublin City Centre considered high risk. Definitions of ‘secure’ e-cargo bike parking were therefore shaped by perceived ‘risk landscapes’ ([Murray, 2009](#)) for ECB theft and damage. Indeed, participants had many views of who they needed to protect their e-cargo bike from: people – generally male – with angle grinders, people “wearing hoodies”, people with vans, and homeless people. These envisaged thieves or vandals were generally believed to concentrate in city centres rather than local residential areas or small towns.

Importantly, participants purchased their e-cargo bikes to extend their practice of cycling in the face of increased mobility demands. For many, having a child and having one’s child(ren) grow larger and

heavier necessitated a new form of cycling beyond a conventional e-bike or bicycle with child-carrying components. E-cargo bikes were a means of providing mobility for one’s children without having to drive, take public transport, or walk or cycle alongside them. In this way, the e-cargo bike was purchased to make participants’ lives more convenient. The security risks of e-cargo bike parking could interfere with this aspiration, and thereby limit the extent to which participants could extend cycling as a primary mode of mobility (see also, [Edberg, 2023](#)). In the following sections, we outline the four dominant styles of e-cargo bike parking participants enacted in order to find a place that was both convenient and secure for their e-cargo bike at rest.

5.1. Standing out

Standing out was a style of cycle parking in which participants parked their e-cargo bike freestanding ‘out’ on the street. Unanchored to any on-street cycle parking facilities or street furniture, the e-cargo bike was parked through use of the bike’s integrated stand and ‘café’ lock, which generally locked the rear wheel. This style resembled the ‘unmoored’ bicycle parking frequently enacted by Copenhagen cyclists as observed by [Larsen \(2017\)](#), in contrast to Amsterdam cyclists, who were described as nearly always mooring their bicycles to an on-street anchor for fear their bicycle would “stand out” (p.67) if parked unmoored. As a parking style, standing out privileged convenience over security and could be described as a ‘close and quick’ means of finding a place. As one participant neatly described, “the convenience for me trumps the concern factor”. It was generally used in two scenarios. First, where the ECB would only be parked unattended for a short duration. Second, where the ECB would literally ‘stand out’ in plain view to the owner – or to informally appointed supervisors. In this study, standing out was a common style of ECB parking for dropping and collecting children from school or creche, “popping in” for a relatively small grocery shop, making “impromptu stops”, and travelling to a local park or playground. For example, Seán emphasised the convenience of standing out as a parking style for small shopping trips relative to shopping with the car:

I would say I do most of the, you know, small, convenient shops, like stopping in Lidl on the way back from something, grabbing a few bits, because, again, it’s easier to park. You just lock up outside, run in and grab your stuff.

Elaine, on the other hand, stood out her e-cargo bike when dropping and collecting her child from creche, emphasising how close the e-cargo bike was to the entrance of the creche and the short duration of parking:

And then, yeah, just drop them in really quickly and come out. But it’s, like, *right* at the door. And then we cycle off again. So, it’s left for about...a minute, I’d say.

Standing out was seen as a feasibly secure style of cycle parking when the ECB was continually within sight or within reach, where participants might literally ‘stand out with’ their ECB waiting for their children at the school entrance. While the visibility of the bike to the owner out in public was favourable to standing out, visibility from within a destination was also highly important – such as from behind the windows of a supermarket. In some cases, participants even actively or incidentally recruited others to keep an eye on their ECB when ‘standing out’ when personally keeping an eye on it was less feasible or anchoring was not available. This responsibility could be delegated to people such as shop security guards, reception staff, and familiar people from the local area.

Since the ECB was not anchored to the street in some way – through the use of official or improvised cycle parking infrastructures – owners generally found additional ways to immobilise their ECB, such as through removing parts of the bike that enabled e-assisting cycling. However, many participants remarked how the heavy weight of an ECB itself – particularly a box-bike – limited the ability for a potential thief “to just pick it up and run off with it”, unlike a conventional bicycle. This matches the findings of [Thomas \(2022\)](#), where some e-cargo bike

Table 1
Basic Participant and Interview (IV) Information.

Age	Gender	Settlement	Bike Type	County	IV Type	IV Duration	IV No.	Pseudonym
30–40	Man	City Suburb	Box-trike	Dublin	In-Person	53 m	1	Damien
30–40	Man	City Centre	Box-bike	Dublin	Zoom	1hr12m	2	Gerald
40–50	Woman	City Suburb	Long-tail	Galway	Zoom	1hr4m	3	Sinéad
30–40	Man	City Suburb	Long-tail	Belfast	Zoom	1hr6m	4	Ian
30–40	Woman	City Suburb	Long-tail	Belfast	Zoom	1hr6m	4	Ruth
30–40	Man	City Suburb	Box-bike	Dublin	In-Person	1 hr	5	Jack
30–40	Woman	City Suburb	Box-bike	Dublin	In-Person	1 hr	5	Elaine
30–40	Woman	City Suburb	Long-tail	Dublin	In-Person	52 m	6	Aisling
40–50	Man	City Suburb	Box-bike	Dublin	In-Person	1hr13m	7	Seán
40–50	Man	City Suburb	Box-bike	Dublin	Zoom	1hr4m	8	Craig
30–40	Man	Town/Village	Box-trike	Kildare	Zoom	40 m	9	Patrick
40–50	Woman	City Suburb	Box-bike	Cork	Zoom	1hr3m	10	Jennifer
40–50	Man	City Centre	Long-tail	Dublin	In-Person	46 m	11	Killian
30–40	Man	Town/Village	Box-bike	Antrim	Zoom	54 m	12	Dara
50–60	Man	City Suburb	Box-bike	Dublin	Zoom	33 m	13	Richard
50–60	Woman	City Suburb	Box-bike	Waterford	Zoom	50 m	14	Niamh
40–50	Woman	City Suburb	Long-tail	Cork	Zoom	1hr7m	15	Muireann
30–40	Woman	City Suburb	Long-tail	Dublin	Zoom	50 m	16	Catherine
40–50	Woman	City Suburb	Box-bike	Dublin	In-Person	54 m	17	Anna
30–40	Woman	Town/Village	Long-tail	Wexford	Zoom	1hr12m	18	Éireann
40–50	Woman	City Suburb	Long-tail	Dublin	Zoom	55 m	19	Amy
40–50	Woman	City Suburb	Long-tail	Galway	Zoom	40 m	20	Emma
30–40	Woman	City Suburb	Long-tail	Cork	Zoom	43 m	21	Laura
40–50	Man	City Suburb	Long-tail	Belfast	Zoom	52 m	22	Conor
40–50	Man	Town/Village	Box-bike	Kerry	Zoom	1h5m	23	Mark

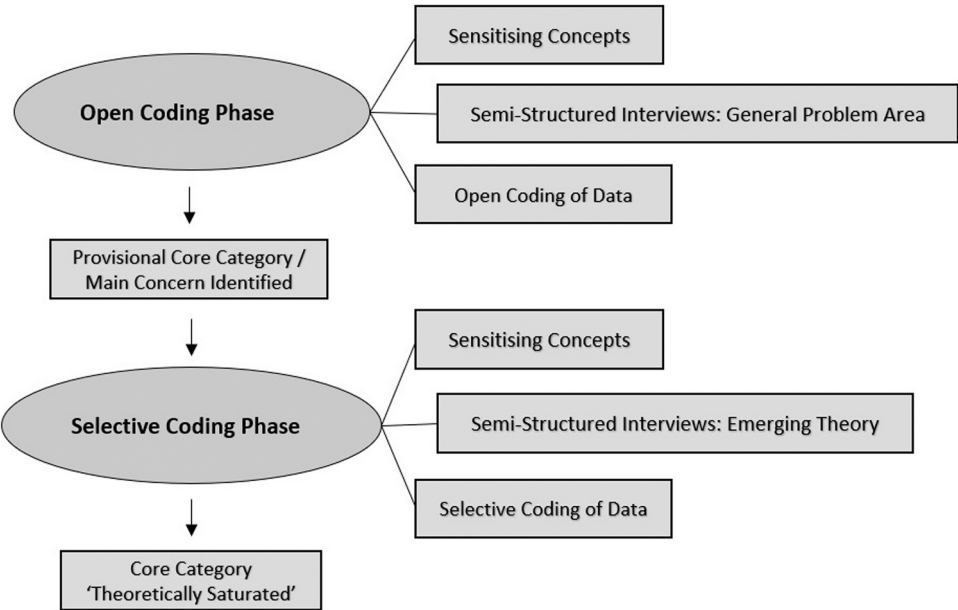


Fig. 1. Grounded Theory Process.

owners perceived the weight of the bike as a deterrent to theft. In addition, this finding shows how e-cargo bike parking may be intrinsically “heavy”, even when heavy locking devices are not used to secure it (Larsen, 2017, p.67).

The footpath was one major place for standing out the ECB among participants in this study. Footpath parking was often practiced with an acute sensitivity to placing the ECB where it would not impede people using the footpath, such as near on-street cycle parking stands. In other instances, participants described how they would appropriate officially designated car parking spaces to ‘stand out’ their e-cargo bike – not unlike the appropriation of cycle lanes by drivers parking their cars for ‘just a minute’ (Egan and Philbin, 2021). In some cases, this form of standing out was enacted when no formal cycle parking was available nearby. However, for some participants, this form of standing out was

considered more convenient than formal cycle parking or parking on the footpath, despite a lurking sense that they may be challenged by a motorist.

I’m absolutely not against taking up a parking space. When I go shopping, when I go to Aldi or whatever, it’s going in a parking space, like. It will go into a regular parking space or a parent and child parking space. Even if I’m on a street where there’s bike parking and it’s a regular footpath, I’ll just find a car parking space. (Jennifer, Cork City)

5.2. Official anchoring

Official anchoring involved the use of “official” (Aldred and

Jungnickel, 2013, p.617) cycle parking facilities to park the ECB. Broad, U-shaped tubular parking stands – widely known as “Sheffield Stands” – were the most common official cycle parking facilities encountered in the study. Since the e-cargo bike would be locked to an on-street cycle stand, this style of ECB parking was often perceived by study participants as more secure than standing out, where the ECB would be parked freestanding without an anchor. Several participants owned long-tail ECBs that were not fitted with integrated café locks; these participants always anchored their ECB when parking in public. While on-street cycle parking might function to stabilise conventional bicycles in Ireland – many of which would not come with stands by default – this function was not necessarily required for ECB owners in this study.

In “lucky” cases where an outside stand was available in an on-street row, official anchoring could be relatively straightforward. However, relative to standing out, official anchoring was nearly always experienced as slower, more physically demanding, and less convenient. The varying widths and lengths of different styles of e-cargo bikes and trikes made parking inside a row of Sheffield Stands challenging and sometimes impossible, as these stands were designed for parking conventional bicycles. The incompatibility between e-cargo cycles and official cycle parking facilities mirrors the findings of Thomas et al. (2022) and seems implicit in the findings of Marincek et al. (2024), who reported that only 30 % of e-cargo bike owners considered parking at their destinations suitable for cargo bikes. Participants in our study described how they usually faced two options when using official cycle parking: physically squeeze the ECB between two stands to anchor it comprehensively, or lock one side of the ECB to the edge of a stand and have the other side prominently “stick out” onto the surrounding street.

Gerald, for example, owned a box-bike. He described how he would sometimes reverse his ECB into a Sheffield Stand so he could lock the rear section securely to the stand, as parking the entire ECB inside a rack was often out of the question. This approach would mean that his ECB would protrude onto the footpath. To ensure that his ECB would not be overly obstructive for others using the footpath, Gerald only engaged in official anchoring in situations where there was ample surrounding footpath space for people to pass.

So, the best thing to do with that is to reverse in, so that the cargo area isn't actually in the stand. But what that will do – with one as long as mine – is it means *protruding* quite far onto the footpath. So, I don't want to block a footpath...obviously. So, if they're positioned...if they're located in an area where there's loads of...footpath space, then I can manoeuvre it in and just do with a D-lock through the back triangle – the rear triangle on the bike – cos the back of the bike is like a normal.

Far from being a straightforward manoeuvre of wheeling the e-cargo bike into position, Gerald emphasised how lifting was generally a required physical competence to squeeze the ECB into a position where it could be locked securely – a finding that resembles the e-bike study of Jones et al. (2016). This, Gerald argued, could make official anchoring extremely demanding for people who may have less physical strength – such as women or disabled cyclists – or who own heavier e-cargo trikes.

Indeed, Catherine, who owned a considerably lighter long-tail ECB, described how Sheffield Stand-style cycle parking was not usable if “someone's bike is slightly awkward either side” of a given row. Catherine remarked on how the weight of the long-tail ECB made manoeuvring it into tight official parking especially demanding compared to a conventional bicycle:

And it's *heavy*, you know. I don't know what the bike weighs, but it's...you kinda have to (makes lifting gesture with both hands with palms up) pull it from the middle weight to get it to move. It's not like my other bike you could kinda pick up with one hand and... (makes fluid manoeuvring motion with hand)...no problem, yeah.

5.3. Improvised anchoring

Improvised anchoring involved the use of embedded on-street objects to securely anchor the ECB rather than official cycle parking stands. This practice has been observed in the bicycle parking studies of Aldred and Jungnickel (2013) and Larsen (2017). In our study, improvised anchors included street furniture such as lampposts, signposts, railings, and trolley bays – a phenomenon widely described as ‘fly-parking’ (Larsen, 2017) – but also personally installed or de facto ground or wall anchors where participants could chain their ECBs at home. Improvised anchoring was centrally achieved through the use of chains rather than a U-locks, due to the superior reach and flexibility chains provided. This style of cycle parking was sometimes used as a means of anchoring the e-cargo bike when official cycle parking was not provided for a particular area. As one participant described frustratedly – referencing the resourceful action hero MacGyver:

Obviously, the council *should be* providing proper parking spaces, but you can...kind of...you can always find some...you'll always be able to MacGyver it...you know? (Éireann, Wexford)

In other cases, improvised anchoring on-street could be a means of ensuring the e-cargo bike was not ‘in the way’ of people using the footpath or road, where the design of official anchoring might position the ECB obstructively – a practice also reported in Thomas (2022).

Aside from destination-end parking, improvised anchoring was a prevalent form of overnight home-end parking. In most cases, participants would adopt this style in adaptation to limited options to *lock away* their ECB off-street where they lived. In the absence of a back garden, a side gate, a garage, or shed, improvised anchoring provided a way to securely park their ECB for long durations near their home, often in locations that were more convenient for everyday use than locking away to the back of their home. In the majority of cases, participants personally installed bike parking anchors available in cycling shops. These devices could be drilled into a concrete ground surface or wall to act as an embedded anchor for the ECB. Generally connected by a heavy chain lock, this relatively public form of home-end parking was considered by several participants to be sufficiently secure for overnight parking.

The placing of the improvised anchors varied among participants. Seán, for example, installed two ground anchors in his driveway at the front of his Dublin home. He anchored his ECB there using chains and a folding lock, in addition to having CCTV surveillance to act as an added deterrent. Seán remarked on the value of having his ECB parked in this position relative to having it locked away in his back garden, privileging convenience over security.

We've a side entrance but it's quite narrow, the bins are in it, there's, you know, a gate that locks – all that kind of stuff. And I'd kinda been thinking of, you know, “If I keep it out the back, then going to the shop on it is going to be an ordeal. I'll have to do all this, you know... all this messing... I'm just going to keep it out the front.” [...] I'd take the trade-off risk that it might be a bit more...stealable because it's out the front, but I'll use it a lot more...and that's worked out as well, like, you know.

Improvised anchoring on-street or in publicly visible front gardens or driveways was a style of home-end parking for a minority of participants in this study. However, Anna, who was from the Netherlands, remarked how improvised anchoring constituted a mainstream form of home-end cycle parking in her home country, where private driveways and back gardens would be less common in urban areas. Residents would install an iron ring anchor into their wall, enabling them to anchor their cycle on-street at the front of their house with a chain lock.

Here, a lot of the houses have this sort of...garden-type-thingsies, with the driveways. In most houses in the centre in the Netherlands, you wouldn't have that. So your door would be immediately on the

street. So you would have pavement and then... So you would park on the pavement, but to your house, and then you have something on the wall that you can...attach it to.

5.4. Locking away

Locking away was a style of cycle parking characterised by parking the ECB 'away' from the street, generally in a locked, professionally supervised, or publicly concealed enclosure. As an off-street style of parking, this could be contrasted with the styles of standing or anchoring the ECB on-street. Locking away was considered the most secure parking style relative to the on-street varieties of finding a place, especially suited to longer duration and overnight ECB parking. With locking away, the ECB was distinctly secured by features of the parking enclosure: its controlled or private access, its professional surveillance, its segregation from the public space of the street. The convenience of locking away as a parking style varied widely, depending on the place one's ECB was 'locked away'. Private enclosures included home garages, hallways or utility rooms, side passages, back gardens, and de facto or purpose-built bike sheds. Many participants considered facilities to lock away their e-cargo bike at home as a condition for owning one. Some described delaying the purchase of their e-cargo bike until they lived somewhere with capacity for off-street ECB storage. This finding resembles the Swiss study of [Marinček et al. \(2024\)](#), where only 27.4 % of shared e-cargo bike users reporting that they had enough space to park a cargo bike at home, compared to 67.9 % percent of e-cargo bike owners. As the ECB was generally in a locked facility, in many instances – with the exception of going away for holidays – participants would rarely lock their ECB itself, although some participants had installed ground anchors to chain their ECB or locked their ECB freestanding when locking away at home.

Several participants commented on their good fortune of having a garage facility at home, resembling the findings of [Thomas \(2022\)](#). Home garages generally provided highly secure and convenient places to park an ECB, although appliances, additional bicycles, and other household items could make an e-cargo bike a tight fit. However, in many cases, participants described how having a garage enabled them to simply 'roll' their e-cargo bike onto the street. Home garages were often used to integrate various aspects of ECB use, such as charging, locking, sheltering (see also [Edberg, 2023](#)), wrapping up oneself and one's children, and loading the ECB, in a way that was 'away' from the street and outside of the home – which many participants considered inaccessible for e-cargo bike storage, in keeping with [Edberg \(2023\)](#) and [Marinček et al. \(2024\)](#). Catherine described how she used a delineated space in her garage to "wheel the bike in" conveniently close to a charging port. Following this, 'locking away' consisted of simply locking the garage shutter and door linked with the house rather than the ECB itself.

So I just have a little bay that's marked out that's just for the electric bike (makes rectangle shape with hands) that's beside the charger. And it goes in there. And I generally...because the garage door is a roller shutter and then there's a door to the house that's double locked...so I generally don't do anything there – just wheel the bike in and close it up. (Catherine, Dublin).

Purpose built or de facto bike sheds were another prevalent style of 'locking away' the ECB at home. Generally, this approach to locking away was more onerous than garage parking as home sheds were often situated in back gardens, further from the street than garages, and were often more difficult to bring an ECB in and out. However, these enclosures offered similar advantages for housing arrangements where a garage was not available for locking away. Not unlike a shed or garage, several participants had their side passages converted to securely lock away their ECBs. Éireann asked a family member to help construct a roof over her side passage so she could have much more convenient access to

her ECB rather than having to "drag it in and out" of a "back shed" as she had to with her previous bicycle. This partial side enclosure protected the ECB with a roof above, a padlocked door to the front and a "high back wall" to the rear. At around 30 kg, the e-cargo bike was considered too heavy to be stolen by lifting it over the back wall, so Éireann would generally lock the side entrance door and leave her ECB unlocked, unless going on holidays.

When I got the new bike, I knew that I wanted to be able to just access it really easily. So I got my brother and his friend to make a roof over the side, and a door that you can lock – it has a padlock. So that's where it is now. It's just really easy to get it out. And we have all the bikes there. It's a side entrance, but it has a door that you can lock on the front of it but not on the back. But we've a fairly high back wall. (Éireann, Wexford)

This finding shows how the heavier weight of the e-cargo bike compared to other cycles can be seen to reduce opportunities for theft, as found by [Thomas \(2022\)](#).

Outside of the home, workplace enclosures for locking away generally comprised parking facilities situated inside of regulated workplace grounds. These enclosures generally required a validated staff access card and were subject to professional surveillance by on-site security personnel. Car parking compounds typically incorporating dedicated cycle parking areas constituted public enclosures for locking away. In this study, all of these public parking compounds were located in Dublin. They lacked formally controlled access of cyclists or pedestrians but were subject to professional surveillance and often provided e-cargo bike specific cycle parking stands. While being in some respects – unlike workplace compounds – 'uncontrolled' environments open to public access, these compounds regulated driver access through paid ticketing. Damien often used his workplace parking, and sometimes his wife's workplace parking, to lock away his ECB when in Dublin City Centre. His workplace – unlike his wife's – did not regulate access for people walking or cycling. However, it did regulate access for people driving vehicles, and was subject to professional surveillance by on-site personnel. For this reason, Damien was happy to use it to park his ECB as it enabled him to lock it 'away' from the road, where it could be robbed by people with a van they could "throw it into".

When I'm going in and out with the cargo bike, I tend to park it at my workplace. [...] I'm also not that worried about it getting stolen because of workplace security, and because if you were going to nip this you need a van [...] And, so, you might do that if it's parked along the road, particularly if it's parked in an area where there isn't people passing by all the time...but, I don't worry about this in my workplace.

Damien also used Drury Street Car Park, which had dedicated ECB-specific stands that he could anchor his ECB. Similar to his workplace, he felt secure locking his ECB away in this facility as it removed the threat of "a van pulling up and someone throwing it in", which he saw as the only plausible way to steal his bike.

Similar to Damien, Seán availed of public off-street cycle parking in Dublin, and noted how the proliferation of these facilities had gradually increased the convenience of locking away the ECB when travelling in the city.

I try not to leave it on-street for too long and then use the dedicated car parks if I'm in town for any longer. With more of them up here – I think there's three now: there's Drury Street, there's Jervis Street, and there's that one on Seán MacDermott Street – you can kinda get one that's within five- or ten-minutes' walk of anywhere in the city now.

However, for participants such as Ian and Ruth, locking away outside of the home was a laborious task. Short of alternative off-street options, they used workplace parking to lock away their ECB when travelling to Belfast City Centre with their family despite it being "out of the way" to

where they wanted to go.

Finally, locking away in its most extreme form was demonstrated by participants locking their ECBs away from particular areas altogether, instead using alternative bikes – such as “beater” or shared bikes (see also, [Aldred and Jungnickel, 2013](#)) – or other modes of transport to reach a particular destination, despite a preference for their ECB.

5.5. Insurance measures

While parking can be considered the foremost means of protecting the ECB, participants enacted various strategies to insure themselves from the risk of their ECB being damaged or stolen. These practices shaped the broader process of ECB parking in this study – or *finding a place*. Numerous participants insured their ECBs under home insurance, to minimise their financial loss in the case of theft. Finding a place that would insure the ECB was a challenge in itself for many. Some home insurers refused to cover the ECB due to its high cost, second-hand status, or the inability of participants to lock the ECB in a secure location away from the street when at parking at home. Bike insurance was also considered by several participants as an alternative but these companies could refuse to cover an ECB or offer an insurance premium considered too expensive by participants.

Ruth and Ian, for example, changed their home insurance provider in order to have their ECB covered. This was decided upon having explored other options such as dedicated bike insurance, which was dismissed due its high cost. Their new home insurance agreement came with terms and conditions for parking the ECB: locking away the ECB in the garage, attached with a heavy motorbike chain to a ground anchor.

I had to install a motorcycle loop in the garage, with anti-tamper things, you know, and it has to be physically locked to that. If it was stolen from the garage and it wasn't locked to that, then they wouldn't insure it.

Similarly, parking in public required use of this motorbike chain – or a comparable “gold” standard lock – to anchor the bike. Carrying this large lock was facilitated by the cargo-carrying capacity of the ECB.

We have a big, real thick motorcycle lock that we have to...we have to use. But the bike has a wee box you can store it in. It's quite handy in that way.

For other participants, insurance conditions for parking appeared to be more relaxed, such as Elaine, whose only condition for parking the ECB in public was having the café lock engaged, making ‘standing out’ an insured public parking practice:

The bike's not insured unless the back lock is locked.

A lack of formal insurance could similarly shape practices of finding a place. Craig, for example, described how he would lock his ECB away from Dublin City Centre because it was not covered by insurance if it got stolen. Lack of formal insurance therefore presented a “limitation” for the places he was prepared to travel on his ECB since formal insurance was not at a price he would be “prepared to pay”.

But, like, I wouldn't go to town on it. Just...why would you, like? You know, so, it's not insured or anything...who would insure that risk?! (Laughs.) You know, at a price I'd be prepared to pay. So, that's the other big limitation.

Several participants used compensatory strategies to personally insure their ECB in the case of theft, particularly in the hope that the ECB could be retrieved at some point with or without the assistance of the police. This was achieved primarily through various methods of surveillance: home CCTV, GPS tracking devices, and bike registration. Seán, whose ECB was no longer covered by home insurance and who anchored his ECB in his front driveway, described the various insurance measures he took to recover his ECB if it was stolen.

I've a couple of cameras on it as well, so that if it does...something does happen, it's hopefully recorded. [...] I have a tracker on it that I pay a subscription on that. You know, again, I don't know if I'd ever be able to get it back, but it gives me a bit of peace of mind that if it ended up in a bush somewhere.

There was a prominent sense that police would not provide any form of assistance in the instance an ECB was stolen and that participants were ‘on their own’ in the case of theft. This resembled wider conditions for cycling in Ireland where the rights of cyclists were subject to neglect by policing authorities ([Egan and Philbin, 2021](#)).

If it was a thousand-euro car, they'd probably put it on a database or do something. But for my cargo bike, they will do nothing. (Craig, Dublin)

6. Discussion

To our knowledge, this study is the largest qualitative study to date exploring the experiences and practices of private e-cargo bike owners and is the first dedicated qualitative analysis of private e-cargo cycle parking in the field. It provides one of the most qualitatively intricate and conceptually-developed accounts of cycle parking practices in the broader cycling literature, building on the pioneering work of [Aldred and Jungnickel \(2013\)](#), [Larsen \(2017\)](#), and [Edberg \(2023\)](#). By theoretically uncovering the “practices, systems and technologies” ([Behrendt, 2018](#), p.67) of e-(cargo) cycle parking, and how these interact with broader systems designed for private cars and conventional bicycles, this study provides a novel contribution to field of e-vélobility ([Behrendt, 2018](#)). Using grounded theory methods, we identified a dominant concern among ECB owners based in Ireland: finding a secure and convenient place to park their ECB – a high-value, logistically essential, and atypically designed cycle. The styles of resolving this concern conceptualised in this study provide several nuanced insights in the context of existing cycle parking and mobilities research.

Much like a private car (see [Aldred and Jungnickel, 2013](#); [Larsen, 2017](#)), ECBs enabled integrated standing and locking, as described in our account of *standing out*. The design of ECBs thereby appeared to decrease the competence ([Shove et al., 2012](#)) of locking one's cycle in a context where in-built stands and locks are uncommon features for conventional bicycles, as noted in the UK study of [Aldred and Jungnickel \(2013\)](#). In addition, unlike conventional bicycles and, to a lesser extent, e-bicycles, the much greater weight of an ECB was seen to increase the competences required to physically steal an unanchored cycle. While one might be able to ‘pick up and run off with’ a locked but unanchored non-cargo cycle, the ECB itself acted as an anchor due to its much greater weight compared to non-cargo cycles. This was perceived to limit theft strategies that could involve carrying an ECB a considerable distance or lifting an ECB over an enclosing wall or barrier.

While providing these perceived advantages, the unique materiality ([Shove et al., 2012](#)) of ECBs also appeared to greatly increase the competences required to *officially anchor* and *lock away* these vehicles indoors relative to a non-cargo bike. Looking first at official anchoring, the vast majority of available on-street and off-street cycle parking stands encountered by participants were designed for non-cargo bicycles and poorly accommodated the unique spatial requirements of ECBs (see also, [Marincek et al., 2024](#); [Thomas, 2022](#)). In order to manoeuvre their ECB into a secure locking position within a row of Sheffield Stands, participants described a frequent need to lift their ECBs, which – as mentioned above – could be exceptionally demanding with an ECB. In addition, anchoring to a Sheffield Stand could often leave the ECB protruding onto the street. On both grounds, official anchoring was not always considered feasible for participants even if there was sufficient space available, due to the design of official cycle parking stands. Nevertheless, with their expanded cargo volume and electrical-assistance compared to e-bicycles or cargo cycles, ECB

participants were enabled to carry heavier and longer locks – most notably chains – more suited to *improvised anchoring* to street furniture.

Turning our attention to locking away, unlike studies that observed practices of locking away private e-bicycles inside the home – including balconies and basements (Edberg, 2023) – parking the ECB inside of house, apartment, or office spaces was considered more or less impossible for many ECB owners in this study, inhibited by the weight of an ECB and its larger spatial requirements. This finding converges with existing ECB studies (Edberg, 2023; Thomas, 2022) and is suggested in the study of Marincek et al. (2024). Home garages, however, presented an exception. These were considered highly convenient and secure interior spaces for ECB parking at home (although arguably not ‘inside’ the home proper), similar to existing studies (Edberg, 2023; Thomas, 2022). This suggests that ECB ownership – and insurance – may be more compatible with larger suburban homes and less compatible with compact, urban living in Ireland at present, where terraced houses and apartments may require more improvised on-street parking styles.

7. Conclusion

In this qualitative study, we found that e-cargo cyclists in Ireland struggled to find a secure and convenient place to park their e-cargo cycle, which limited how far they could extend their practice of cycling. These findings strongly suggest that the future of private ECB mobilities is highly dependent on an inclusive vision of cycle parking futures (Spurling, 2020), as indicated in existing e-cargo vélomobility research (Edberg, 2023; Marincek et al., 2024; Thomas, 2022). Relative to non-cargo bicycles, our research suggests that ECBs are more ‘out of place’ (Aldred and Jungnickel, 2013) inside of official cycle parking facilities and homes in Ireland, but less ‘out of place’ when appropriating car parking spaces and home garages, which are often designed to store cars, thereby revealing a unique appropriation practice (Petzer et al., 2021). In other words, where parking is concerned, ECBs appear to find a place more readily within a system of automobility (Urry, 2004) rather than the current system of vélomobility (Cox, 2019) in Ireland.

On this basis, we make several observations regarding planning measures that could enable more ECB-inclusive cycle parking arrangements in the context of Ireland:

- **Public on-street:** The provision of official and informal spaces to *stand out* the ECB on-street could enable more convenient short duration parking, such as parking enacted when “picking up” or “dropping off” children, or “popping in” to the shops. The security of such parking could be enhanced by ensuring excellent visibility for the user from their nearby destination (e.g., inside the shop or playground, outside the school gate), and by providing some segregation from the road, to protect the ECB from motor-vehicle-assisted theft.
- **Public off-street:** The provision of more publicly available off-street cycle parking compounds or hubs in areas of high demand, complete with ample cargo bike-accessible anchors, could enable greater proximity for private ECB users to a variety of destinations without the insecurity of parking on-street for long periods. Guarded facilities where cycles are checked-in and checked-out with on-site staff could be particularly effective and secure (The Hague and Partners, 2025).
- **Residential:** The relaxation of local planning regulations on constructing front-of-house cycle storage sheds (Ginty, 2024b), the popularisation of installing improvised anchors onto household premises (a common practice in the Netherlands), and the provision of on-street, enclosed cycle parking that is cargo cycle accessible, could enable more people living in houses or apartments without access to a garage or private compound to purchase and use an ECB.

Future research in the area of private e-cargo cycling could build on this small-scale qualitative study, by i) quantitatively investigating e-cargo cycle parking practices at a much greater scale, comparing ECB

parking practices with other forms of cycle parking, ii) biographically charting the process by which prospective or existing e-cargo bike owners might choose or retrofit their homes to accommodate an e-cargo bike, and iii) exploring the technical and political processes of e-cargo bike parking planning (Petzer et al., 2021), considering in tandem the social justice implications of existing parking planning guidance, policy, and legislation.

CRedit authorship contribution statement

Brian Caulfield: Conceptualization, Writing – review & editing, Project administration, Funding acquisition. **Hannah Julianne:** Writing – review & editing, Supervision, Project administration. **Robert Egan:** Writing – review & editing, Investigation, Conceptualization, Project administration, Formal analysis, Methodology, Data curation, Writing – original draft, Funding acquisition.

Funding

This work was supported by the Sustainable Energy Authority of Ireland under the SEAI Fellowship Pilot Programme 2022 [grant number 22/RDDF/756].

Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The data that has been used is confidential.

References

- Aldred, R., Jungnickel, K., 2013. Matter in or out of place? Bicycle parking strategies and their effects on people, practices and places. *Soc. Cult. Geogr.* 14 (6), 604–624. <https://doi.org/10.1080/14649365.2013.790993>.
- Behrendt, F., 2018. Why cycling matters for electric mobility: towards diverse, active and sustainable e-mobilities. *Mobilities* 13 (1), 64–80. <https://doi.org/10.1080/17450101.2017.1335463>.
- Central Statistics Office (2022). NTA07 - Distribution of journeys. Central Statistics Office. (<https://data.cso.ie/table/NTA07>).
- Charmaz, K., 2014. *Constructing Grounded Theory*, second ed. Sage.
- Conway, R., Morrow, J., Brennan, R., Mulvey, C., 2019. The Current State of Cycling Infrastructure in Dublin and Copenhagen: A Comparison of Cycling Infrastructure in 8 Radial Routes into the City Centre of Dublin and Copenhagen. *Irish Medical Journal* 112 (1), 856.
- Cox, P., 2019. *Cycling: A Sociology of Vélomobility*. Routledge.
- Department of the Environment, Climate and Communications (2023). Climate Action Plan 2024. Department of the Environment, Climate and Communications. (<https://www.gov.ie/en/publication/79659-climate-action-plan-2024/>).
- Department of Transport (2021). National Investment Framework for Transport in Ireland. Department of Transport. (<https://assets.gov.ie/211869/00417b1f1-9473-41e2-bd91-327686e92081.pdf>).
- Dill, J., Rose, G., 2012. Electric bikes and transportation policy: insights from early adopters. *Transp. Res. Rec.* 2314 (1), 1–6. <https://doi.org/10.3141/2314-01>.
- Dowling, R., Maalsen, S., 2020. Familial mobilities beyond the private car: electric bikes and car sharing in Sydney, Australia. *Appl. Mobilities* 5 (1), 53–67. <https://doi.org/10.1080/23800127.2019.1571658>.
- Dublin City Council (2024). Find Secure Bike Parking Across Dublin. Dublin City Council. (<https://www.dublincity.ie/residential/transportation/active-travel/using-walk-wheel-cycle-network/cycling-around-dublin/find-secure-bike-parking-across-dublin>).
- Edberg, K., 2023. The (im-)mobile e-bike: infrastructural components of an emerging micromobility practice. *Article 1. Act. Travel Stud.* 3 (1). <https://doi.org/10.16997/ats.1192>.
- Edberg, K., 2024. E-biking within a transitioning transport system: The quest for flexible mobility. *Mobilities* 19 (3), 428–443. <https://doi.org/10.1080/17450101.2023.2259111>.
- Egan, R., Philbin, M., 2021. Precarious entitlement to public space & utility cycling in Dublin. *Mobilities* 16 (4), 509–523. <https://doi.org/10.1080/17450101.2021.1913067>.
- European Commission (2022). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the

- Committee of the Regions: The New EU Urban Mobility Framework. European Commission. (https://transport.ec.europa.eu/system/files/2021-12/com_2021_811_the-new-eu-urban-mobility.pdf).
- European Commission (2023). EUROPEAN DECLARATION on CYCLING: Commission proposal of a European Declaration on Cycling to the European Parliament and the Council. European Commission. (https://transport.ec.europa.eu/system/files/2023-11/European_Declaration_on_Cycling_en_0.pdf).
- Fyhri, A., Fearnley, N., 2015. Effects of e-bikes on bicycle use and mode share. *Transp. Res. Part D Transp. Environ.* 36, 45–52. <https://doi.org/10.1016/j.trd.2015.02.005>.
- Fyhri, A., Sundfør, H., 2020. Do people who buy e-bikes cycle more? *Transp. Res. Part D Transp. Environ.* 86, 102422. <https://doi.org/10.1016/j.trd.2020.102422>.
- Ginty, C. (2024a). Electric cargo bike owners in Ireland asked to take part in research. *Irish Cycle*, February 26. (<https://irishcycle.com/2024/02/26/electric-car-go-bike-owners-in-ireland-asked-to-take-part-in-research/>).
- Ginty, C. (2024b). An Bord Pleanála writes 16-page report rejecting bicycle shed, but owner now might replace it with trailer which isn't covered by planning laws. *Irish Cycle*, July 21. (<https://irishcycle.com/2024/07/21/an-bord-pleanala-write-s-16-page-report-rejecting-bicycle-shed-but-owner-now-might-replace-it-with-trailer-which-isnt-covered-by-planning-laws/#:~:text=The%20planning%20inspector%2C%20Patricia%2DMarie,and%20the%20precedent%20such%20a>).
- Glaser, B., Strauss, A., 1967. *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Sociology Press.
- Gruber, J., Kihm, A., Lenz, B., 2014. A new vehicle for urban freight? An ex-ante evaluation of electric cargo bikes in courier services. *Res. Transp. Bus. Manag.* 11, 53–62. <https://doi.org/10.1016/j.rtbm.2014.03.004>.
- Johnson, M., Rose, G., 2015. Extending life on the bike: Electric bike use by older Australians. *J. Transp. Health* 2 (2), 276–283. <https://doi.org/10.1016/j.jth.2015.03.001>.
- Jones, T., Harms, L., Heinen, E., 2016. Motives, perceptions and experiences of electric bicycle owners and implications for health, wellbeing and mobility. *J. Transp. Geogr.* 53, 41–49. <https://doi.org/10.1016/j.jtrangeo.2016.04.006>.
- Jones, T., Spencer, B., Beale, N., Leyland, L.-A., Reekum, C.M. van, 2022. “You can go out 14 miles away with the knowledge that you’ve got the battery to help you back if you need it!” Narratives of ranging behaviour and wellbeing in diaries of e-bike trial participants. *Article 2. Act. Travel Stud.* 2 (2). <https://doi.org/10.16997/ats.1046>.
- Larsen, J., 2017. Bicycle parking and locking: ethnography of designs and practices. *Mobilities* 12 (1), 53–75. <https://doi.org/10.1080/17450101.2014.993534>.
- Marinček, D., Rerat, P., Lurkin, V., 2024. Cargo bikes for personal transport: A user segmentation based on motivations for use. *Int. J. Sustain. Transp.* <https://doi.org/10.1080/15568318.2024.2402753>.
- Melia, S., Bartle, C., 2022. Who uses e-bikes in the UK and why? *Int. J. Sustain. Transp.* 16 (11), 965–977. <https://doi.org/10.1080/15568318.2021.1956027>.
- Murray, L., 2009. Making the journey to school: the gendered and generational aspects of risk in constructing everyday mobility. *Health Risk Soc.* 11 (5), 471–486. <https://doi.org/10.1080/13698570903183889>.
- Narayanan, S., Antoniou, C., 2022. Electric cargo cycles—A comprehensive review. *Transp. Policy* 116, 278–303. <https://doi.org/10.1016/j.tranpol.2021.12.011>.
- National Transport Authority (n.d.). TFI Smarter Travel for Workplaces. National Transport Authority. (<https://www.nationaltransport.ie/tfi-smarter-travel/get-involved/>).
- National Transport Authority (2023). *National Household Travel Survey 2022: Final Report*. National Transport Authority. https://www.nationaltransport.ie/wp-content/uploads/2024/05/NTA_NHTS2022_UpdateReport_13May2024.pdf.
- National Transport Authority and Department of Transport (2023). *Cycle Design Manual*. National Transport Authority and Department of Transport. (<https://www.nationaltransport.ie/publications/cycle-design-manual/>).
- Petzer, B.J.M., Wiecek, A.J., Verbong, G.P.J., 2021. The legal street: a scarcity approach to urban open space in mobility transitions. *Urban Transform.* 3 (1), 3. <https://doi.org/10.1186/s42854-021-00018-0>.
- Phillips, I., Azzouz, L., de Séjournet, A., Anable, J., Behrendt, F., Cairns, S., Cass, N., Darking, M., Glachant, C., Heinen, E., Marks, N., Nelson, T., Brand, C., 2024. Domestic use of E-cargo bikes and other E-micromobility: protocol for a multi-centre, mixed methods study. *Article 12. Int. J. Environ. Res. Public Health* 21 (12). <https://doi.org/10.3390/ijerph21121690>.
- Popovich, N., Gordon, E., Shao, Z., Xing, Y., Wang, Y., Handy, S., 2014. Experiences of electric bicycle users in the Sacramento, California area. *Travel Behav. Soc.* 1 (2), 37–44. <https://doi.org/10.1016/j.tbs.2013.10.006>.
- Rérat, P., 2021. The rise of the e-bike: Towards an extension of the practice of cycling? *Mobilities* 16 (3), 423–439. <https://doi.org/10.1080/17450101.2021.1897236>.
- Revenue (2024). Taxation of employer benefits: 5. Cycle to Work Scheme. Revenue. (<https://www.revenue.ie/en/jobs-and-pensions/taxation-of-employer-benefits/cycle-to-work-scheme.aspx>).
- Shove, E., Pantzar, M., Watson, M., 2012. *The Dynamics of Social Practice: Everyday Life and how it Changes*. Sage.
- Spurling, N., 2020. Parking futures: the relationship between parking space, everyday life and travel demand in the UK. *Land Use Policy* 91, 103872. <https://doi.org/10.1016/j.landusepol.2019.02.031>.
- Statista (2024). *Market insights: Mobility: Bicycles – Ireland*. Statista <https://www.statista.com/outlook/mmo/bicycles/ireland>.
- The Hague & Partners (2025). (Bicycle) storage. The Hague & Partners. (<https://denhaag.com/en/do/traffic-and-public-transport/bicycle-storage/locations/>).
- Thomas, A., 2022. Electric bicycles and cargo bikes—Tools for parents to keep on biking in auto-centric communities? Findings from a US metropolitan area. *Int. J. Sustain. Transp.* 16 (7), 637–646. <https://doi.org/10.1080/15568318.2021.1914787>.
- Thornberg, R., 2012. Informed grounded theory. *Scand. J. Educ. Res.* 56 (3), 243–259. <https://doi.org/10.1080/00313831.2011.581686>.
- Urry, J., 2004. The ‘system’ of automobility. *Theory Cult. Soc.* 21 (4–5), 25–39. <https://doi.org/10.1177/0263276404046059>.
- Wild, K., Woodward, A., Shaw, C., 2021. Gender and the E-bike: exploring the role of electric bikes in increasing women’s access to cycling and physical activity. *Article 1. Act. Travel Stud.* 1 (1). <https://doi.org/10.16997/ats.991>.