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Making Micromobility Part of the Liveable City – Analysing the Impacts, and Integration of Electric Scooters

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PREFACE

This thesis concludes my master's degree in Urban and Regional Planning at the Norwegian University of Life Sciences (NMBU). My interest in urban planning for liveable cities and mobility has developed as a passion during the past years. The idea of writing my thesis about electric scooters started as a funny idea a couple of years ago during my exchange year in Spain. As I started to notice this new form of shared micromobility appearing in various cities I visited, a fascination and curiosity in me emerged. Was this really going to be the mode of transportation in the city of tomorrow?

I would like to express my appreciation to my supervisor, Matthew Cashmore, for guiding me through the process of developing this thesis in the right direction. He has helped me narrow down the scope of the thesis to the focus and investigations that have been conducted.

I could not be more satisfied with my academic development and experiences while studying at NMBU. The student society and academic environment have indeed been a considerable part of my life for the past five years. Even though the last one sadly has been different due to the Covid-19 pandemic.

I want to thank my parents for their endless support and encouragement in taking a master's degree.

Finally, a special thanks go to all the friends, acquaintances, and significant other I have been lucky to meet and know on the path to where I am now. I truly appreciate the moments and spectacle that I have witnessed and been part of during my time as a student in Ås. A town that forever will be a part of me.

Jonas André Johannessen
Ås, 05.06.2021

ABSTRACT

This thesis and its research have aimed to better understand and insight the highly relevant topic of urban planning of public spaces and infrastructure concerning micromobility. E-scooters is a new element in the urban context that so far has not been deeply implemented in urban planning theories, and existing scholarly works and research are limited or relatively recent.

Some of the challenges with today's use have been related to parking and how e-scooters visually spoil the cityscape and represent a threat to the pedestrian right-of-way on the pavement. The presence of e-scooters in the urban context has become a prominent issue for the common user of public space, especially for those with disabilities. Therefore, this research has aimed to develop a new framework, based on urban planning theory and principles, for how e-scooters can be better planned for as part of the liveable city.

The two Norwegian cities of Oslo and Fredrikstad were chosen as part of a multiple-case study for data collection to give an insight on some of the impacts e-scooters have had in Norway. Aspects from urban planning theories have been applied to define principles for planning a liveable city with e-scooters in mind. An online survey and field observations were done to investigate people's perceptions of e-scooters, the relationship between the built environment, how e-scooters are parked, and what effect this might have on other users' right-of-way in the public space.

The results from the field observations and the online survey partly validated each other when it comes to overall issues indicated by respondents and the ways improper parking was observed. The online survey generally corresponded with expectations and former research on the perceptions between users and non-users, young and senior citizens. In general, respondents indicated measures for better regulations and more designated parking.

The research of this thesis concludes that there is a need for targeted regulations and physical measures in the built environment, that can better integrate e-scooters as part of the city's infrastructure and public spaces, without limiting nor reducing other users' right-of-way. The accessibility for pedestrians and people with disabilities should always be prioritised, while other modes of transportation should be adapted. These are some of the main measures towards a new framework for how e-scooters can be better integrated as part of the public space. A framework where other's accessibility is preserved, while maintaining the concept of the liberal use that e-scooters represent.

SAMMENDRAG

Denne oppgaven og dens forskning har hatt som mål å tilnærme seg en bedre forståelse og innsikt i det svært relevante tema innen byplanlegging av offentlige rom og infrastruktur, relatert til mikromobilitet. Elektriske sparkesykler er et nytt element i den urbane konteksten som hittil ikke har blitt dypt implementert i byplanleggingsteorier. Samtidig er eksisterende vitenskapelige arbeider og forskning nokså begrenset eller ganske nylig gjennomført.

Noen av utfordringene med dagens bruk har vært relatert til parkering og hvordan Elektriske sparkesykler visuelt ødelegger bybildet og representerer en trussel mot fotgjengerens rett på fri ferdsel på fortauet. Tilstedeværelsen av elektriske sparkesykler i den urbane konteksten har blitt et fremtredende tema for mannen eller kvinnen på gata i det offentlige rom, spesielt i forhold til med nedsatt funksjonsevner. På bakgrunn av dette har målet med denne forskningen vært å utvikle et nytt rammeverk, basert på byplanleggingsteori og prinsipper, for hvordan elektriske sparkesykler bedre kan planlegges for som en del av den levbare byen.

De to norske byene Oslo og Fredrikstad ble valgt som en del av en flercasestudie for datainnsamling for å gi et innblikk i noen av påvirkningene elektriske sparkesykler har hatt i Norge. Aspekter fra byplanleggingsteorier er brukt for å definere prinsipper for hvordan man planlegger en levbar by med tanke på elektriske sparkesykler. En digital spørreundersøkelse og feltobservasjoner ble gjort for å undersøke folks oppfatning av elektriske sparkesykler, forholdet mellom det fysiske miljøet, hvordan sparkesykler parkeres, og hvilken effekt dette har på andre brukeres rett på fri ferdsel i det offentlige rom.

Resultatene fra feltobservasjonene og den digitale spørreundersøkelsen bekreftet delvis hverandre når det gjelder generelle problemer indikert av respondentene, samt måtene feil parkering ble observert. Den digitale spørreundersøkelsen samsvarte generelt med forventninger og tidligere forskning, relatert til oppfatningen mellom brukere og ikke-brukere, unge og eldre borgere. Generelt ønsket respondentene tiltak for bedre reguleringer og flere faste parkeringsplasser for elektriske sparkesykler.

Forskningen i denne oppgaven konkluderer med at det er behov for målrettede reguleringer og fysiske tiltak i byrommet, som bedre kan tilpasses for elektriske sparkesykler som en del av byens infrastruktur og offentlige rom. Samtidig som andre brukeres fremkommelighet i det offentlige rom blir ivaretatt. Fremkommeligheten til fotgjengere og funksjonshemmede bør alltid prioriteres, mens andre transportmidler bør tilpasses. Dette er noen av de viktigste tiltakene mot et nytt rammeverk for hvordan elektriske sparkesykler kan integreres bedre som en del av det offentlige rom. Et rammeverk der alles fremkommelighet bevares, samtidig som det fleksible konseptet som elektriske sparkesykler representerer blir opprettholdt.

CONTENTS

CHAPTER 1: INTRODUCTION

1.1 Background

In the past couple of years, cities across the globe have been introduced for electric scooters as an alternative mode of transportation. This form of micro-mobility has made it possible to travel distances that formerly could be seen as too short for public transportation or too long to walk; it completes the so-called “last mile” of travel. This new mode of transportation has become a rapidly popular alternative to public transportation, biking and walking. (Fearnley et al., 2020; Karlsen & Fyhri, 2021; Karlsen et al., 2021).

However, the user-friendly and liberal way to park the scooters has brought conflicts in meeting with public space that is limiting accessibility for other modes of transportation and people with disabilities. Thus, it also challenges urban planners’ ability to predict and plan for holistic and dynamic user interaction in urban spaces. Norwegian news media has reported significant concerns with e-scooter parking blocking pavements, especially when cluster-parked, which have seemed more problematic during summer, holidays, and weekends (NTB, 2020; Hessen & Tuft, 2021; Sundby, 2021).

Key challenges of e-scooters identified by recent Norwegian research (Fearnley et al., 2020; Karlsen et al., 2021) is related to the high risk of accidents when in use, and the unorganised parking is visually spoiling the cityscape and reducing the accessibility for other users. Unregulated parking has been a source for much of the conflict. Alike with recent research, “*there is a need for more knowledge on all aspects related to e-scooters in order to adapt for both traffic security, sense of safety, mobility and parking”* (Karlsen et al., 2021: 1).

This thesis is not presenting any concrete suggestions for juridical regulations but reflects upon those existing and discusses different approaches for solutions, especially with a focus on parking. This has established the framework for investigating the effect e-scooters have on the built environment of public spaces and its users. The theories and data presented are to be used as a source and inspiration for future research based on urban planning theories and principles for creating liveable cities.

In this chapter, different aspects for why there is a need for further research on this topic will be presented. Starting with the current challenges facing the integration of e-scooters, the existing governance framework in Norway and abroad, how the topic is relevant for urban planning, followed by how the covid-19 pandemic might have affected how mobility is planned. The chapter ends with presenting the research question for this thesis and three goals for how it will be answered. This creates the framework and background for the data collection presented and discussed in later chapters of this thesis.

1.2 Challenges with Integrating E-scooters in Norway

The lack of legislation and governance framework for e-scooters in Norway is one reason for various problems related to user interactions, where they are parked, such as blocking other users right of way in the public space, visually polluting the cityscape and the unrestricted use of public ground. (Berge, 2019; Jusstudentenes Offentlige Utredning, 2019; Karlsen & Fyhri, 2021; Karlsen et al., 2021). A former review of global media sources also found that the most significant concerns people had after introducing e-scooters were irresponsible riding, safety, improper parking in general and on the pavement. (Gösling, S.,2020).

A project carried out by The Norwegian Institute of Transport Economics (Karlsen et al., 2021) looked at how users of e-scooters were reacting to the placement of parking racks in Oslo and painted parking spaces in both Oslo and Trondheim, Norway. The project showed that people are more likely to use designated parking when frequently located close to the users' destinations. The racks used in the project was owned by one operator, which promoted these to their users through rewards like discounts, resulting in most users of these racks were the ones using the same operator's e-scooters. This was seen as an indication of a need for neutral parking racks with promotions from all operators or painted areas for a better approach.

Figure 1. 1 Designated parking rack for e-scooters in Oslo.

Another indication of parking shown in the project (Karlsen et al., 2021) was the tendency of cluster parking where other users had parked before, observing that 7 out of 10 did so. This happened regardless of designated parking spaces, which increased the potentiality of the effect such measures for parking spaces would have, drawing more people to park collectively. However, such parking could be problematic if placement for cluster parking is not signalised to preferred areas through racks, painted ground or other measures. There was also a tendency for people to park where the operators had placed e-scooters in the first place.

By paining designated parking areas on the ground, people were more likely to park in or close to these, reducing the blockage of pedestrian accessibility. In this case, a former pedestrian pathway was again cleared and thus impacted the place's walkability (Karlsen et al., 2021).

Non-users could also impact the placement of parked e-scooters. In the project by TØI (Karlsen et al., 2021), a driver of a delivery car was observed moving e-scooters from a parking spot reserved for service vehicles to the sidewalk. The same e-scooters were later moved back by a pedestrian. This example shows how some people are taking their own measures to 'clean up' their environment.

Interviews done in Oslo (Karlsen et al., 2021) revealed that most non-users of e-scooters had experienced e-scooters as strongly obstacles when walking, while the users themselves answered that they experienced this to a small extent, which confirmed former research. Karlsen et al. (2021) reflected that this difference in opinions between non-users and users could be due to age, personal experiences with e-scooters and various degree of sympathies for this kind of vehicle.

Karlsen et al. (2021) concluded that there was a general reduction of e-scooters blocking and reducing the accessibility for other users in the public space after the implementation of racks and painted parking areas. However, it is more challenging to implement the same solutions for parking at smaller sites like sidewalks, where parked e-scooters are more likely to be obstacles for pedestrians. Karlsen et al. (2021) have thus suggested a need for further research on parking solutions along sidewalks, signage, and different kinds of reward systems to indicate desired parking behaviour. The effect of cluster parking should also be benefitted through the placement of designated parking zones that reduces blocking of passageways for other users in the public space.

1.3 The Current Governance Framework in Norway

The rapid growth of e-scooters in Norway has challenged the existing legal and governance systems. The e-scooters are taking advantage of a blind zone of current regulations (Deighton-Smith, 2018, quoted in Fearnley et al., 2020), challenging local and national governance. The operators have been using public space for commercial activity for free, and the e-scooter itself is balancing between regulations for bikes and motorised vehicles (Fearnley et al., 2020). New Norwegian regulations for bikes and e-scooters was implemented on the 18th of May 2021 and are elaborated later. For this part, an elaboration of what the current Norwegian governance framework have covered and regulated for the use of e-scooters before the new regulations.

The Norwegian Public Roads Administration categorises e-scooters together with other forms of micromobility like; Airwheel, ClassyWalk and Segway as “small electric vehicles”. At the same time, they are defined as bicycles according to standardised measurements for weight, size, and a maximum speed of 20 km/h. If this speed is surpassed, e-scooters are defined as motorised vehicles and are not allowed to be used on sidewalks or bike lanes. They also fall under different technical recrements (Statens vegvesen, 2021).

Streets in Norway are regulated by ‘The Road Traffic Act’ (Lov om vegtrafikk, 1965). Through §1 first paragraph, the act applies to *“all motor vehicle traffic and other traffic on roads or in areas used by motor vehicles”.* This act thus applies to e-scooters as they fall under the term “*other traffic on road*” when speed is no more than 20 km/h. E-scooters would define as “*motor vehicle*” if this speed were to be surpassed. §2 says: “*Roads*”, according to the definitions of this act, also means “*streets and open squares, including lay-bys, parking places, stopping places, bridges …*” (Lov om vegtrafikk, 1965) The act’s basic rules of traffic in §3 further determines that:

> *“Anyone shall travel with consideration and be alert and cautious so that danger or damage is not caused, and so that other traffic is not unnecessarily obstructed or inconvenienced. Travellers on the road shall also show consideration for those living or staying by the road”*
> (*Lov om vegtrafikk*, 1965, §3).

§3 should be understood as a law that applies to anyone travelling on the road, including cars, bikes, pedestrians and e-scooters alike. While it promotes safety, it gives everyone a personal responsibility for road users' own behaviour so that it does not cause danger or difficulties for others (Trygg Trafikk, n.d.)

The regulation for traffic rules (Forskrift om kjørende og gående trafikk, 1986) has special provisions for bicycles in §18. It allows bicycles to be used on walkways/sidewalks and pedestrian crossings when *"pedestrian traffic is small and the biking does not cause danger or is in the way of pedestrians. When passing pedestrians, such biking must happen with fair clearance and with speed approximate to the pedestrians".* Further, §18 nr. 4 let bicycles *"stop or park in bikeway, walkways, sidewalks, pedestrian streets or residential streets if it's not in an unnecessary hindrance or inconvenience".*

When applying the definitions by The Norwegian Public Road Administration, e-scooters are regulated the same way as bicycles when the speed is 20 km/h or below and matches the measurements in the regulation for bicycle requirements (cf. *Forskrift om krav til sykkel,* 1990*,* §2 last paragraph).

While most bicycles are in general privately owned, people are less tempted to park their bikes wherever in the public space, as there is a higher risk for them to be stolen. On the other hand, e-scooters in Norway are mostly rented (Karlsen & Fyhri, 2021), making people park them more freely, without the fear for them to be stolen or damaged. This is one of the reasons why existing regulations for bikes do not work the same way for e-scooters, as the feeling of personal ownership is absent. Thus, much indicates a need for new regulations that especially regards e-scooters and micromobility.

1.4 The Governance Framework in Other Countries

While e-scooters in Norway follows the same regulations as bicycles, other countries have various approaches. Research done by SINTEF and The Norwegian public road administration (Meland et al., 2020) showed that in France and the Netherlands for instance, e-scooters are regulated as mopeds and allowed in bike lanes and public roads, but not sidewalks. Denmark and Finland have defined e-scooters as bicycles, but in contrast to Norway, forbidden their use on pavement.

Electric bikes in France and the UK are regulated as bikes the same way as in Norway, with a maximum speed of 25 km/h and a maximum effect of 250 watts. With an exception in Northern Ireland, where electric bikes are considered mopeds and requires a drivers license for this and registration, payment of taxes and incurrence (Dagorn, 2018; GOV.UK, n.d., cited in Meland et al., 2020).

The situation with e-scooters in Spain is a bit different, as most people (95%) use privately owned e-scooters rather than rental (Instituto de Movilidad, 2020). Spain has regulated e-scooters as an own category of vehicles along with cars and motorbikes, but with a maximum speed of 25 km/h. They are allowed in bike lanes, urban roads and streets, while being prohibited from using on pavements, pedestrian zones, and outside of the urban city area. A further recent adjustment by the Spanish traffic authorities was to pass a new legislation

changing the speed limit on urban two-way streets from 50 to 30 km/h, promoting better traffic safety for all users (BOE, 2020; VPE, 2020).

The USA has local regulations that differ from cities and states. In Los Angeles, e-scooters together with e-bikes are considered motorised vehicles. Other states like New York, Oregon and Washington DC has regulated them as bicycles, while some cities have even applied the same regulations as motorcycles (Fang et al., 2019; Meland et al., 2020).

Research from Portland indicated that most users of e-scooters drove on the pavement when the speed limit in the street was 30 mph (≈50 km/h). Simultaneously, e-scooters driven on pavement reduced pedestrian comfort. E-scooter users were more likely to drive in protected bikeways or streets with neighbourhood greenways (PBOT, 2019). This could illustrate the need for a better-connected network of infrastructure that invites better user interactions.

Los Angeles is one of the cities with the longest experience with e-scooters as part of the urban picture, first introduced in Santa Monica 2017. The city council and Los Angeles Department of Transportation (LADOT) have implemented various approaches throughout the years, starting with a temporary ban in 2018 to let officials implement rules that could govern the local use of e-scooters. This resulted in a pilot that established requirements for a one-year permit program that operators needed to follow and be approved to operate on the city's public space. The pilot permit program let LADOT better control and manage the rapid development of micromobility as it evolved, changing and testing out various ways to regulate and manage (LADOT, 2020).

As for parking LADOT implemented strict regulations that lays much of the responsibility on the permitted operators that *"shall ensure that their Vehicles are parked in the landscape/furniture zone of the sidewalk, preferably to a bicycle rack or in another area specifically designated for bicycle parking. Operators shall inform Customers on how to properly park a Vehicle"* (LADOT, 2019).

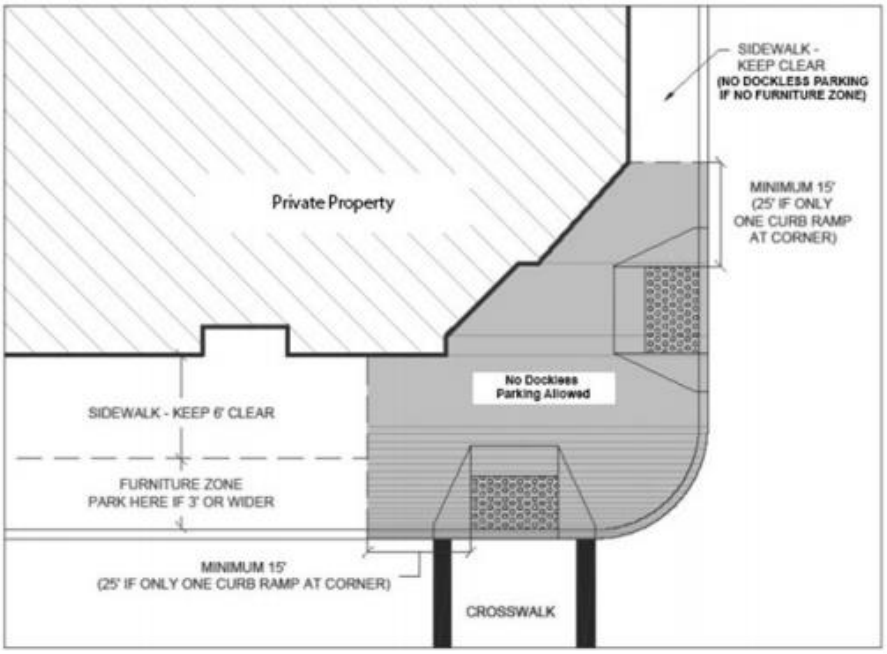


Figure 1.2: Regulation of parking by street corners in Los Angeles (LADOT, 2019).

1.5 A Need for Better Legislation

Researcher at the Institute of Transport Economics (TØI), Nils Fearnley, pointed out during a webinar on e-scooters (*MikroReg kickoff*, 20.04.2021) that it has had great success, with a market that has quadrupled from 2019 to 2020. He argued that an unregulated market is not well-functioning and that Norwegian municipalities and cities have been begging the government for access to more local regulations. The use of public space and accidents related to e-scooters are some of the main factors that emphasise the need for better regulations. Fearnley further stressed that excessive regulations and requirements for technology could strangle innovations, which in fact could contribute to better conditions for e-scooters in the future.

It thus seems like there is a need for legal actions to take control over the public space. Today's legal policies for Norwegian public streets and places might be too liberal and not adapted for the change of use that has emerged in the past decade. Especially concerning the private operators that are renting out their e-scooters from public streets for free and without any legal need for a contract or deal with the local authorities (Bolstad, 2020). This could be seen as a weakening of local authorities' legal tools and governance when trying to solve conflicts that are arising when e-scooter companies are taking advantage of the grey zones of the existing regulations.

> *"Decisions made by governmental bodies may be implemented through direct action by government agencies or through the various ways and means of influencing and shaping the decisions of private actors by creating policy and legal frameworks..."* (Carmona et al., 2010: 64).

However, even with a weak legal framework for governance, some e-scooter operators have indeed seen their duty and influential power to prevent unnecessary conflicts and disturbances in the public space. Some have intended to make agreements and plans for use together with local authorities. For instance, the Norwegian municipality of Stavanger has approved local guidelines in agreement with three operators, where each can have up to 250 e-scooters placed on streets around the city (Nilsen, 2020).

On the other hand, some companies have gone to a lawsuit against local authorities that have tried to obstruct the companies from taking advantage of the inadequate regulations that exist. This was the case between the municipality of Bergen and a new e-scooter operator during the summer of 2020, when hundreds of e-scooters were placed around the city centre of Bergen without any agreement with the municipality. It all ended in court, where the municipality of Bergen lost against the operator due to the weak existing legal tools for regulation and local governance (Indrebø-Langlo, 2020).

1.6 New Regulations May 2021

The work towards better regulation of e-scooters in Norway has been under development. On the 18th of May 2021, the Norwegian Department of Transportation presented stricter regulations for e-scooters. The key changes of the new regulations are:

- *More legislative tools to municipalities for regulating small electric vehicles such as; governing parking restrictions and penalties, implementation of new physical signs meant for establishing parking zones, speed limits or prohibition of use.*
- *Illegal to be more than one person while riding an e-scooter, with a penalty of 3000 NOK.*
- *Made it more explicit that pedestrians are prioritised on pavement and pedestrian zones, with a regulated maximum speed of 6 km/h when passing. This also applies to bicycles.*
- *It has been better clarified that the traffic rules do not limit the proprietary rights of the municipality.*

(Samferdselsdepartementet, 2021; Sundby et al., 2021)

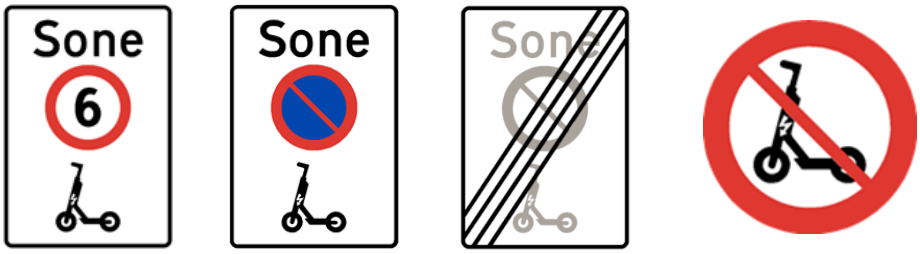


Figure 1.3: Some of the new signs for regulating e-scooter in Norway (Samferdselsdepartementet, 2021).

This thesis has been conducted under the existing framework before these new regulations were presented. As the conditions might have changed due to this, future research should be aware of this when considering the results of the empirical work later presented in this thesis.

1.7 Relevance for Urban Planning

While e-scooters represent present challenges itself as a new element of public space, it also represents a change towards sustainable mobility. A higher focus on this can be seen when cities are replanning for mobility by limiting the accessibility for cars in city centres and promoting sustainable modes of transportation. This is further affecting cities' design of infrastructure and public spaces. One of the most noticeable adaptions is the focus on facilitating streets with bicycle lanes, public transportation, and pedestrian's accessibility. In light of the sustainable mobility paradigm, transportation is in itself not a desired activity, but a necessity that is dependent on the destinations people wish to visit. It is the value of the destination that is the triggering factor that results in the travel (Banister, 2008).

On the other hand, E-scooters is such a new phenomenon that is less facilitated and included as part of the restructuring of infrastructure for mobility and the redesign of public spaces.

"Electric scooters are chosen because it is the fastest, most flexible and fun (Fearnley et al., 2020)*"*. This new mode of transportation can thus be seen as a deviation from the principles the mobility paradigm is representing; the activity of the travel itself could, in the case of e-scooters, also be the goal for amusement. It could, in some cases, be used as a mode of transportation without any particular destination. This is one of the factors challenging urban planners' capability to predict and plan the adaption for e-scooters as part of infrastructure and public spaces. Another factor is the quite liberal ways the e-scooters can be parked almost anywhere within the designated zone of distribution.

> *"Sustainable urban design requires patterns of development able to accommodate and integrate the demands and needs of the various movement systems while supporting social interaction and exchange"* (Carmona et al., 2010: 102).

For urban planners, it is expected to have a dynamic understanding of the society's present demands for development, whilst future requirements for change should be aimed to be predicted. The way e-scooters work in today's urban space is challenging urban planners' capability to foresee and design for dynamic user interactions in public spaces with a holistic approach where all users are considered. Therefore, much indicates that this topic needs further investigation related to urban planning practices and theory to understand what measures are needed to improve today's use of e-scooters.

The principle of controlling change and learning from the past are key factors regarding how we live in a constantly shifting world that will always require attention in the field of urban planning. As new concepts for living, mobility, working, and communication comes with innovation and new technology, it is crucial to look at how past change has been dealt with. Have past experiences with adaptions to change been successful or not? Has the change been positive or negative? How can we better control and adapt to changes in the future? These are some questions that should be reflected upon when planning for changes.

Figure 1.4: E-scooter resting in greenery in Fredrikstad.

1.8 A Change Towards Sustainable Infrastructure

The idea of sustainable and compact cities was already introduced in the report *"Our Common Future*" by the Brundtland Commission in 1987 (quoted in Cervero et al., 2017: 35):

> *"A sustainable city is one that satisfies the needs of its residents and workforce without compromising the ability of future generations to meet their own needs within a similar cityscape".*

The report has later contributed to political breakthroughs for various development models that promote collective planning of housing, space and transportation, e.g. transit-oriented-development (Hanssen et al., 2015). In the past years, we have for real began to see the physical changes in the urban context, which indicates an increased necessity to change the result of former development and prevent a global climate crisis (Børrud & Røsnes, 2016).

Cities worldwide are experiencing a change in how the prioritisation in urban planning has gone from cars to more sustainable-friendly modes of transportation and increased facilitation for pedestrians. This can be seen through urban densification and changes of street designs like the conversion to pedestrian streets only or bus- and bicycle lanes.

> *"The new urban designer will need to feel comfortable operating under conditions of ambiguity, appreciating the fact that the science and art of integrating sustainability into urban design is an evolving challenge requiring the adaption and advancement of ideas as they emerge"*
> (Abramson et al., 2008, quoted in Carmona et al., 2010: 8).

What if more areas used for roads were converted to open public spaces, reserved for green mobility only? What if we rethink the concept of roads completely? What if road traffic no longer is synonymous with car traffic? Is it possible to make people change their travel habits by physically changing their daily routes of transportation and its' design?

Urban mobility is in an evolution towards a future where we are changing the way we move around. Though strong opinions and opposition against the increased presence of micromobility in the urban context, this could be the exact development needed to start the actual reconstruction of our urban infrastructure. Simply by rethinking the concept of streets and how we use them, creating better city space for more city life. This was what successfully done with the main street *Strøget* in Copenhagen in the 1960s, being one of the first cities in Europe to reclaim city space from the cars (Gehl, J., 2010).

> *"Environmentally progressive cities with world-class public transport and cycling infrastructure, such as Copenhagen and Stockholm, are leading the charge in decarbonising their urban transport sectors"*
> (Cervero et al, 2017: 45).

With Copenhagen in mind as a success story and being one of today's most bike-friendly cities (Copenhagenize Index, 2019), there is once again a need to reorganise urban space in cities. Only this time, the variation of mobility is rather complex and might demand a different approach for change than just the removal of cars.

As we see a change in urban mobility trends, moving towards increased use of micromobility, the simple solution might not just be redesigning streets for pedestrians only. Just because fewer might drive a car does not necessarily mean that all roads should be pedestrian-only, as there is still a need for infrastructure supporting other forms of mobility. Roads should instead be redesigned from their traditional shape and style. There might be a need to adapt roads and redesign for the sustainable ways of future mobility, being by walking, biking, public transport and various forms of micromobility.

> *"The transition from privately owned petrol or diesel cars to community owned autonomous electric vehicles, as well as to bicycles and small electric vehicles, in combination with much greater use of mass transit, provides a unique opportunity for citizens to reclaim their cities from the dominance of the car"* (Glazebrook & Newman, 2018).

Maybe the problem with today's urban infrastructure is that the walkable and bikeable networks are not dominant enough compared to roads designated for cars and heavy traffic. The creation of car-free districts is a trend in cities worldwide that opens for a network of uninterrupted, free of barriers walkable centres. This kind of re-distribution of areas makes them more suitable as social hubs for recreation, while it opens for easier use of bikes and micromobility. *"The sustainable city is strengthened generally if a large part of the transport system can take place as green mobility"* (Gehl, J., 2010: 7).

Athens, Greece; Seville, Spain; Bremen, Germany; and Bologna, Italy are examples of cities that have made their historical city centres car-free. Using green connectors aimed to link parks, open space and transit hubs, preferably without any barriers or disturbances in the mobility flow. (Cervero et al., 2017).

1.9 The Pandemic's Impact on Urban Mobility Planning

The covid-19 pandemic has impacted the world in various ways during 2020 and 2021. Research in Portland, USA, compared the number of trips done with e-scooters during 2020 to trips done in 2019. The research found that the number of trips dramatically declined due to both the covid-19 pandemic and severe unrests following the Black Lives Matter protests (PBOT, 2020). While this might not be fully comparable to the same effects in Norway, it gives an indication of how the pandemic has impacted mobility patterns and the use of e-scooters during this year. I failed in finding similar Norwegian data or numbers, but recent research indicated that, in general, fewer used e-scooters in combination with other modes of transportation during the summer of 2020 (Karlsen & Fyhri, 2021).

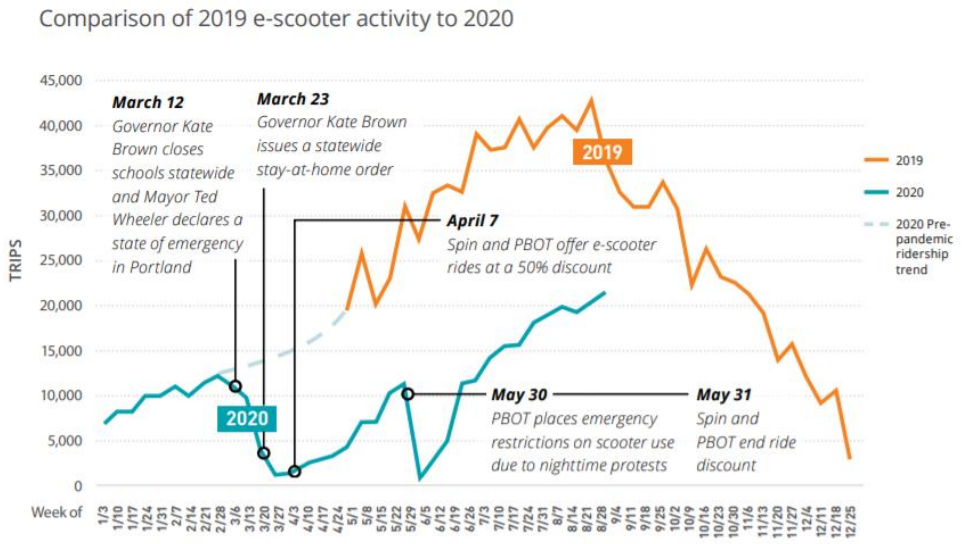


Figure 1.5: Change of e-scooter activity between 2019 and 2020 in Portland, USA (PBOT, 2020).

A factor that has been noticeable during the time with a pandemic is how mobility patterns might have changed as a result of the way we have tried to avoid using public transportation and crowded places. To prevent the spread of infections, local authorities have in fact discouraged people from travelling by public transportation (FHI, 2020). This has made us think differently regarding where, how and the necessity of our travel. However, this could also have opened some peoples' eyes to other alternative and even more sustainable modes of transportation, such as bicycling and walking.

"It took a pandemic for many cities to start thinking about bicycles" (Colville-Andersen, M., n.d., quoted by Medina et al., 2020). Some cities have during the pandemic taken advantage of this by implementing more bike lanes and roads. In much of these cases, cities have already been developing existing plans for improving their infrastructure for bikes, which during the year 2020 got a boost in progress and made alive.

"Some European cities such as Amsterdam, Oslo and Copenhagen have been encouraging bike use for years. But the pandemic, as well as growing citizen concern for public health and the environment, are pushing more capitals to follow in their wake" (Medina et al., 2020).

It might seem that European cities have gotten more inspired to set higher ambitions for changing their infrastructure during the pandemic. London aims to expand their biking network ten times bigger within 2025, while Brussels with their expansion during 2020, increased their amount of bike trips by 40%, and Lisbon wants to double their existing network

of 105 km during the first half of 2021. Paris is one of the most impressive examples where 50 km of bike lanes was added during 2020 to the existing network of 700 km, having seen a growth of bicycling with 65% (Medina et al., 2020).

Paris has had a significant advantage in the rapid development during 2020, already experiencing a bicycle boom. They have been doing a makeover of their urban infrastructure the past years by promoting car-free transit and introducing the concept of a 15-minute city by walk or bike (Medina et al., 2020). During the pandemic, Paris rearranged streets to cycleways as a solution to prevent crowded transits. As the city planned for the reopening of businesses, mayor Anne Hidalgo has advocated for keeping the new infrastructure to prevent cars on the roads, and further reduce pollution. (Sisson, P., 2020; O'Sullivan, 2020).

The measures done in Paris resembles former strategies that have aimed to promote bicycling. An example is a program called Ciclovía in Bogota, Colombia. Here the city's major roads were blocked for cars and redistributed every Sunday for cyclists and pedestrians. The initiative, through political will, worked as a temporary extension of the city's park system and attracted hundreds of thousands every week. Later similar methods for promoting bicycling and walking have been exported to cities around the world (Montgomery, C., 2013).

We might see the pandemic as a new initiating factor for change in how we plan urban infrastructure. People have been forced to change their daily habits in multiple ways through strict restrictions for public gatherings and the practice of social distancing. This has limited public transportation and its capacity, making people having to travel at different times of the day or choosing other forms of transportation. As cities have made various measures to ease mobility and adapt the infrastructure, the pandemic might in fact have established new frameworks for urban mobility. Although removing cars from cities' roads is still a radical move in urban planning, requiring political will (Montgomery, C., 2013), present and post-pandemic time might allow further actions towards a recalibration of urban infrastructure.

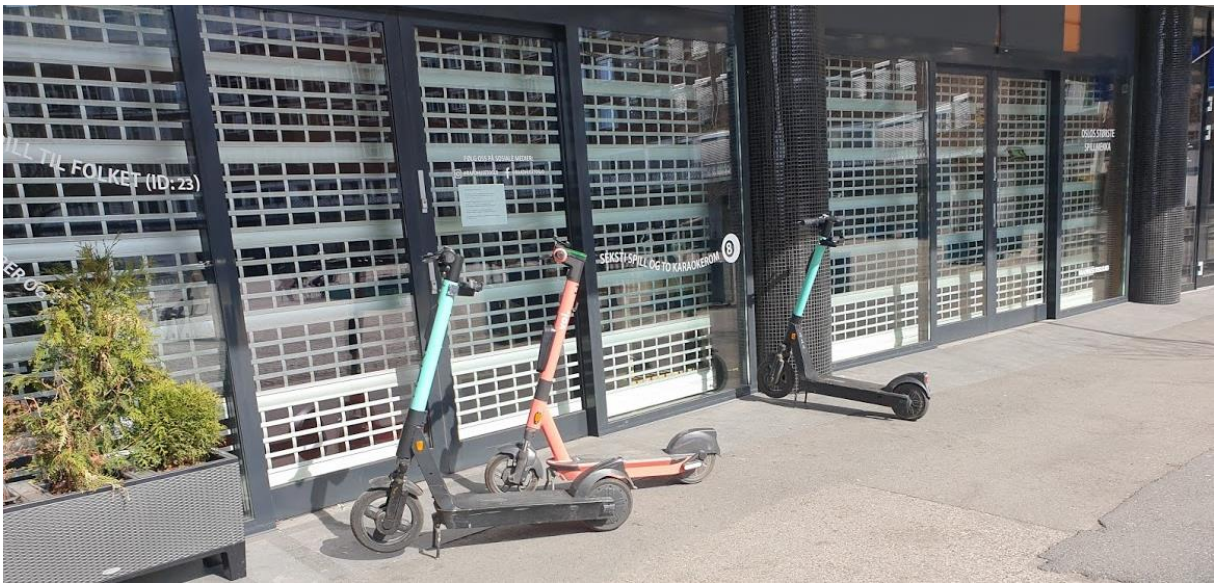


Figure 1.6: E-scooters parked in front of closed doors on a Friday afternoon during the pandemic lockdown in Oslo, April 2021.

1.10 Research Question & Goals

This master's thesis looks at how electric scooters' presence is impacting the built environment of public spaces and urban planning for dynamic and combined user interactions as part of a liveable city. The research is done through three goals to answer the following research question:

Research question:

How can e-scooters be better integrated as part of the public space without obstructing other's accessibility, while maintaining the freedom of using e-scooters?

Three goals for the research:

Goal 1: Establish a framework based on urban planning theories and principles relevant for how e-scooters can be better planned for as part of the liveable city.
(Theoretical review)

Goal 2: Investigate people's perceptions on how e-scooters are used today.
(Online survey)

Goal 3: Understand the relationship between the built environment, how e-scooters are parked and what effect this might have on other user's right-of-way in the public space.
(Field observations)

Figure 1.7: Research question and research goals.

1.11 Thesis Structure

In chapter 2, the research question is put in the methodological context, and the approach to each of the three goals are further elaborated. In chapter 3, the framework for urban planning theory and principles is established to reflect upon how to create a liveable city with e-scooters in mind. In chapter 4, the analysis of the results from the online survey that has investigated peoples' perceptions on how e-scooters are used today are presented. Followed by the results for the analysis from the field observations that have investigated the relationship between the built environment and e-scooters. Chapter 5 discusses the theoretical framework and the results from the empirical work to answer the three goals and the research question. The conclusion of this master's thesis is elaborated in chapter 6.

CHAPTER 2: METHODOLOGY

2.1 Data Collection

In this chapter, the methodologies and approaches for each research goal (see figure 1.7) are elaborated. Using grounded theory (Johannessen et al., 2011), subjective ideas and perspectives from theories collected during the literary research and former empirical works have contributed to developing the thesis' research goals. This approach has contributed to the decision-making and resulted in the different methodologies applied throughout the research period.

Urban planning theories have been applied to present and establish planning perspectives on creating inclusive public spaces in the liveable city, with e-scooters in mind. This has been supplemented with a multiple-case study in the cities of Oslo and Fredrikstad, where data collections were done through an online survey and field observations. The data collection for the survey and field observations are made through a quantitative approach and statistically analysed. The methodology used is primarily building further on and inspired by former research on e-scooters and micromobility (Fang et al., 2018; Owain et al., 2019; Faernley et al., 2020; Færdselsstyrelsen, 2020).

The survey aimed to understand the opinions and perceptions among users and non-users of e-scooters and age groups. It also looked at how mobility patterns have changed during the past year related to the covid-19 pandemic. Finally, what measurements are most wanted for improving the use and conditions for e-scooters in the public space.

The observational study aimed to understand the relationship between the built environment, how e-scooters are parked, and the effect this has on other users' accessibility in the public space.

The study and data collections in this thesis were done during the covid-19 pandemic. Therefore, the results and data collection might differ from former researches conducted before the pandemic due to possible changes in mobility habits during 2020/2021.

2.1.1 The Assessment of Validation and Reliability

The data presented in the results has sought to be validated by former research and reflects the phenomena that has been analysed. This has corresponded to the research question and its intentions. The results from this research and its transferability to former research have been reflected and compared, so subjectivity is strengthened (Johannessen et al., 2011).

Reliability relates to how accurate the research data is, what data is applied, how it is collected, and how it is analysed. The results from the data collection have been tested and analysed through the assessment of reliability in this thesis and in relation to former research (Johannessen et al., 2011). The reliability has been tested so that data for this research is as accurate as possible, though some factors could slightly vary. The approaches of data collection and analysis have thus been transparently explained and openly reflected through decisions made throughout the research process.

2.1.2 Research Ethics

The framework for the research of this master's thesis has been approved by the Norwegian Centre for Research Data (NSD). The research has followed the guidelines for ethical values and research management applied by the Norwegian University of Life Sciences (NMBU, 2017). The ethical considerations associated with the research was limited to not collect any form of sensitive or personal data that could identify respondents.

2.1.3 Cases

In this multiple case study, initially 4 Norwegian cities were chosen, but 2 cases were considered the maximum feasible for this research due to the limited time available. Finally, the two cities of Oslo and Fredrikstad were chosen for data collection and comparison between the extent of e-scooters, their impact on the built environment of public spaces, and users and non-users' perceptions.

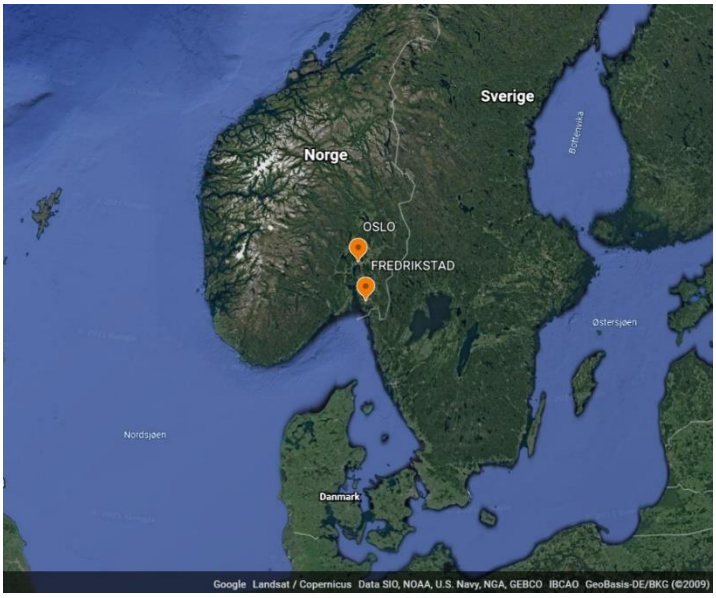


Figure 2.1: Oslo and Fredrikstad located in the Scandinavian context (Google Earth, 2021).

Oslo, the capital of Norway, is located in the end of the Oslo Fjord with nearly 700 000 inhabitants (SSB, 2020b), while Fredrikstad is a smaller city with about 83 000 inhabitants (SSB, 2020a) situated approximately 2 hours south of Oslo and 30 minutes from the Swedish border.

Oslo has been exposed to e-scooters since 2018 and offers e-scooters from a wide range of operators (Berge, 2019). Various sources estimate that the amount of e-scooters in Oslo is between 15 000 to 25 000, making it among the European cities with the most e-scooters (Sundby, 2021; Hessen & Tuft, 2021; Jordheim & Yildirim, 2021).

On the other hand, Fredrikstad was introduced for e-scooters in September of 2020 and has had one operator offering about 300 e-scooters in the city. Even though the municipality has not been able to regulate, the introduction here has been better controlled due to constructive communication between the municipality and the operator (Holøien, M., 2020; Dalene, P. S., 2021).

The approach for the multiple-case study was chosen to look at the different degrees of impact from e-scooters these two cities might have, both in terms of perceptions among inhabitants and possible different impacts related to the built environment. Another aspect of the choice is that much of existing Norwegian research has been conducted in Oslo, while Fredrikstad is still new in the "e-scooter-game".

2.2 Goal 1: Urban Planning Theory for the Liveable City (Theoretical Review)

Establish a framework for urban planning theory and principles relevant for how e-scooters can be better planned for as part of the liveable city.

The methodology used through grounded theory has aimed to develop new perspectives, thoughts, and possible new theories regarding what is crucial in existing urban theories for creating liveable cities. It has been intended to create a theoretical framework of this kind to enlighten what to further focus on in the discussion for a new framework in this thesis. This was done by analysing data from ideas that emerged from analysing existing urban theories during the literary research.

The primary collection of data was done through a semi-inductive approach to the narrative analysis of relevant urban planning literature. The research has applied grounded theory to present and reflect upon data gathered from urban planning theories, scientific literature, former empirical work, and news articles. This has further established some new theories and framework for possible measurements for improving the use of e-scooters as part of the liveable city.

The theory used to support research goal 1 is related to urban design theories, spatial rights, control, and through the social, functional, and visual dimensions of urban design focusing on public spaces and mobility. This thesis has aimed to investigate the relation between e-scooters and these dimensions to establish the theoretical framework for e-scooters related to urban planning theories.

2.3 Goal 2: People's Perceptions on the Use of E-scooters (Online Survey)

Investigate people's perceptions on how e-scooters are used today.

The main objective of goal 2 has been to analyse the perceptions between those with and without experience using an e-scooter. This was done using an online survey to efficiently reach out to more respondents, instead of interviewing people on the street. Since most generations in 2021 Norway have access to the internet (KMD, 2019), this was an efficient approach for collecting all age groups and people from all around in the case cities. Another reason for conducting an online survey has been related to restrictions for travelling and social distancing during the covid-19 pandemic. The trade-off from this is that the respondents might have understood the questions differently. On the other hand, interviews could also have impacted the answers through interaction between the respondent and interviewer, called "*the interview effect"* (Johannessen et al., 2011). Thus, the survey questions have aimed to be formulated in the most communicable and straightforward way possible to prevent confusion.

The survey included questions for all respondents regarding mobility behaviours and habits during the last year with the covid-19 pandemic to understand the mode of transportation used more, less, or the same compared to pre-pandemic times. General questions on e-scooter perceptions and experiences with e-scooters in public spaces were asked to all respondents. Those defined as users got additional questions regarding their use and experiences with e-scooters. The end of the survey also allowed all respondents to agree or disagree with different statements regarding e-scooters by using a 5-point Likert scale (Johannessen et al., 2011). Finally, respondents could choose among various measures they thought could improve e-scooter conditions in the city.

2.3.1 Distinguish Users and Non-Users of E-Scooter

One of the initial questions in the survey aimed to distinguish the users from the others was whether the respondent had ever used an e-scooter or not. Those with former experience was included as users even if they only had used e-scooter once. This is the same approach to distinguish "users" and "non-users" in previous research (Fearnley et al., 2020). I decided to use this not very strict approach since I wanted to see the aspects between those ever having tried and those who had no experience at all. This could have made it easier for respondents to answer, but it could also result in users with quite a little experience using an e-scooter (only once) as part of users.

Figure 2.2: Parked e-scooters in the public space

2.3.2 Survey structure

The Survey was built up as a semi-structured questionnaire with mainly pre-coded answers, combined with the possibility of free-text responses (Johannessen et al., 2011). Respondents could write their own answers if they elected the pre-coded choice *"other".* This approach made it simpler for respondents to answer and gave them the liberty of free speech if some of the pre-coded alternatives did not fully describe the respondents' opinion. The pre-coded answers also made it easier to analyse the results statistically afterwards when coding the data using Microsoft Excel (Johannessen et al., 2011). The complete survey design used in this thesis can be found in attachment 1.

2.3.3 Survey Sub Research Questions

To investigate in depth goal one on people's perceptions on how e-scooters are used today, a list of sub research questions was created. These also established the framework of the survey:

- *How have travel habits for people changed during the covid-19 pandemic?*
- *What mode of transportation is mostly used among all respondents during covid-19?*
- *Who is the typical user of e-scooter?*
- *What opinions on e-scooters exist among different age groups and users/non-users?*
- What regulations and measurements for improving the use-scooters are most wanted among respondents?
- *Are there any differences in opinions between Fredrikstad and Oslo?*

2.3.4 Survey Distribution

Nettskjema, an online platform for questionnaires and collecting anonymous data, operated by the University Information Technology Center at the University of Oslo (UiO, 2021), was used to design, manage, and distribute the survey data collection. The results were later analysed using Microsoft Excel.

The distribution was done by reaching out to several local Facebook groups with Oslo and Fredrikstad as target cities. It was also sent directly to personal friends living in these two case cities and further shared among their friends and families. E-mails were sent to a total of 8 high schools, where only one in Fredrikstad responded and shared it with their employees and pupils. The intention was to get a variety of respondents of different age and backgrounds that could reflect all opinions on e-scooters. Various organisations of interest were contacted by e-mail, such as; most e-scooter operators, Norges Blindeforbund (The Norwegian Association of the Blind), Norges Handikapforbund (The Norwegian Association of Disabled) and the municipalities of Oslo and Fredrikstad. The survey was open for 13 days between 15.04.2021 and 28.04.2021.

The survey got a total of 812 respondents. The number of respondents with postal codes in Oslo were 434 and 208 from Fredrikstad. Additionally, 170 odd responses were from outside of the case cities and disregarded due to the delimitation of this thesis. The distribution of respondents by postal codes is illustrated for Oslo in figure 2.3 and Fredrikstad in figure 2.4.

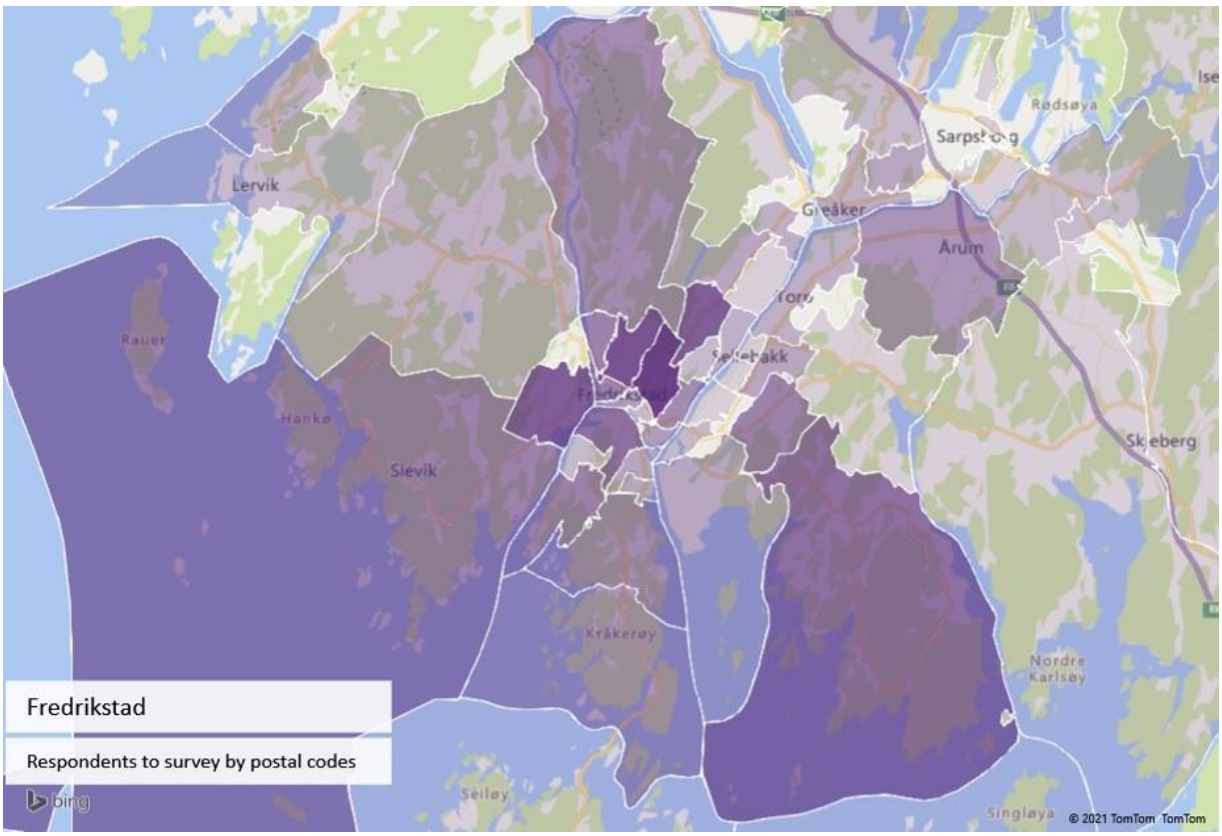


Figure 2.3 and 2.4: Maps showing areas of postal codes to the respondents of the survey in Oslo and Fredrikstad (Bing/Microsoft Excel, 2021).

2.4 Goal 3: The Built Environment & E-scooters (Field Observations)

Understand the relationship between the built environment, how e-scooters are parked and what effect this might have on other user's right-of-way in the public space.

The collection of data through field observations aimed to paint a picture of how different built environment attributes might affect parking practices (Owain et al., 2019). Further, this would give simple indications of to what extent e-scooters reduce other users' accessibility in the public space. The analysis was done equally for Oslo and Fredrikstad and presented in chapter 4 separately before a summary in chapter 5 points out and reflects the key differences and equalities of the results from the two case cities. This is further connected to the theoretical perspectives to present a new framework for planning a liveable city.

2.4.1 Field Observations Approach

During two days in both case cities, I took photos of parked electric scooters using a smartphone camera with geotagging turned on. In attachment 4, links to Goole Drive albums including the photos taken during the field observations in Oslo and Fredrikstad can be viewed. The photos were analysed using an excel-scheme (see attachments 2 and 3) to categorise the type of parking, improper or proper, and the number of e-scooters. Additionally, the built environment closest to the parked e-scooter was identified through attributes of interest. Non-street-side attributes were always labelled, which identified the land use adjacent to the parked e-scooter. Street-side or pavement attributes were given depending on whether the e-scooter was parked in the street or on the pavement (street-side attributes was not often used). The full criteria for type of parking and the descriptions for different attributes used for the analysis in this study are elaborated in figures 2.5, 2.6 and 2.7.

2.4.2 Type of Parking Attributes

Following are tables with the attributes used to identify types of e-scooter parking and the built environment:

Position:	
Upright	E-scooter is parked upright using side stand
Not upright:	E-scooter is always improper if not parked upright or leaning on other objects.

Figure 2.5: The table describes the attributes for e-scooter position.

Proper:	Description:
Not blocking other's right-of-way:	E-scooter is not in any way improperly parked. The possibility of obstructing or being hazardous to people with disabilities is minimum.
In street furniture zone:	E-scooter is properly parked within the street furniture zone, not blocking passageways nor access to street furniture.
In suitable parking zone:	E-scooter is properly parked in or within the zone of racks for bike parking or painted e-scooter parking or racks.

Improper:	Description:
Blocking vehicle right-of-way:	E-scooter is (even partly) in the street or parking lane reserved for vehicles or reducing the accessibility for vehicles.
On greenery:	E-scooter is on grass or other vegetation.
On private property:	E-scooter is in the front yard/ back yard of private property, reducing access to the e-scooter for other users.
On technical infrastructure:	E-scooter is on top of street ventilation/window lattice.
Obstructing access to street furniture:	E-scooter is in the way for people to access street furniture such as benches (including benches without back and armrest). E-scooter is not obstructing access if street furniture is accessible from another side.
Obstructing access to bikeshare station:	E-scooter is parked in a way that prevents shared city bikes to dock in bikeshare station.
Inconvenient at public transportation stop:	E-scooter is parked in a not suitable way at a public transportation stop (blocking passageway or access to benches).
In loading zone:	E-scooter is parked in a zone reserved for goods delivery and transport trucks.
In zone reserved for firefighters:	E-scooter is parked in a zone that is reserved for firefighter trucks in case of emergency.
Leaning on wall/street furniture/greenery:	E-scooter is not upright or and leaning on other objects or vegetation. Including if the e-scooter was in a designated parking zone and not blocking other's right-of-way.

Figure 2.6: The tables shows attributes for proper and improper parking.

2.4.3 Built Environment Attributes

Built Environment Elements	Attributes of interest
Street-Side Attributes	- Travel lane - Parking lane - Bike lane/road
Pavement Attributes	- Pedestrian Passageway - Street furniture - Greenery (e.g., grass, plants, trees) - E-scooter parking (painted/racks) - Bike parking - Bikeshare station - Other parking - Fire hydrant - Public transportation stop - Technical infrastructure (e.g. electrical cabinets, light poles) - Entrance
Non-Street-Side Attributes	- Restaurant/bar/café/leisure - Offices - Retail - Off-street parking - Residential - School - Park/plaza

Figure 2.7: The table shows attributes for the built environment.

2.4.4 Defining Proper Parking

As e-scooters mainly have followed the regulations for bikes in Norway, regulations and definitions for bicycle parking have been included in the assessments to define proper/improper parking in the Norwegian context. The criteria for proper parking in the analysis are based on Norwegian regulations and guidelines for bicycles and former attributes applied in former empirical works (Owain et al., 2019; Fang et al., 2018).

A report on the planning of parking for bicycles from The Norwegian Public Road Administration recommends that the location of bicycle parking on pavements and pedestrian streets should be included when planning curb zones, furniture zones, passageways, and wall zones. Holistic design must be taken into account so that passageways are free of hindrances for all users of public space (Statens vegvesen, 2020b).

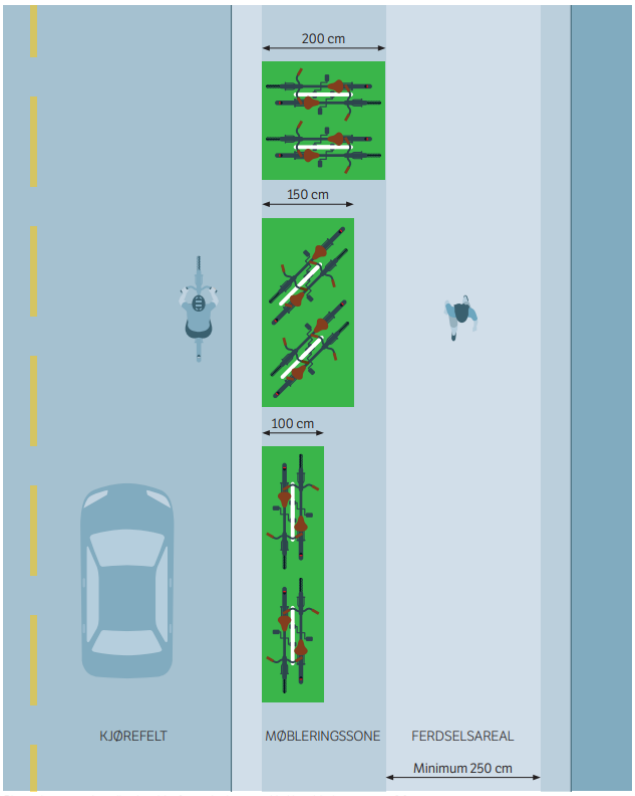


Figure 2.8: Suggested layout for bicycle parking in furniture zone and necessary pavement width (Statens vegvesen, 2020b).

Pavements need a passage way of a minimum of two meters and a curb zone of a minimum of 0,5 meters, or 0,7 meters at bus stops or where curbs end. When the pavement includes a furniture zone, the passageway should be increased to 2,5 meters so that maintenance vehicles can access. However, it is preferable that parking is done in the furniture zone so that the chance of conflicts with pedestrians is smaller (Statens vegvesen, 2020b).

Pavements that had a greater width than 2 meters and without furniture zone could still have an area suitable for e-scooter parking, as long as such parking still left a minimum of 2 meters free passageway. Parking was categorised as improper if the pavement was "split in two", e.g. if an e-scooters was parked in the middle of the pavement without furniture zone, even though 2 meters of the passageway was left on both sides.

A general rule for using proper parking attributes was that it should always benefit people with disabilities. Even if an e-scooter only represented a slight risk for obstructing access for other users, the consideration for people with impaired vision and users of wheelchairs was strict.

2.4.5 Organisation & Analysis of Field Observations

During the analysis of the photos, Google Street View was used when in doubt identifying the non-street-side attribute. This was made possible thanks to the geolocation enabled for each photo.

The e-scooters in the photos were labelled with an ID-code to identify which city the photo was taken (Oslo=O; Fredrikstad=F), the first day or second day of observation (O1, O2, F1, F2) and the number of the e-scooter observation that day. For example, a photo taken of an e-scooter on the second day of observation in Oslo could have the ID code “O2.14”, which means that it was observation number 14 that day, and all e-scooters of that ID-code had the same attributes. This made it possible to analyse e-scooters with different attributes separately when there were more e-scooters in the same photo. Thus, an ID code could include more e-scooters if they had the same attributes.

In figure 2.9 all e-scooters got attributes for improper parking. However, the kind of improper parking was different as one was upright in the pedestrian passageway, while the others were not upright on greenery. Therefore, the one e-scooter upright got the ID-code O2.13, while the others got O2.14 since they had the same attributes.

Figure 2.9: The photo includes four e-scooters that was observed on observation-day 2 in Oslo. One got the ID-code “O2.13” and the other three got “O2.14”.

In former research having used a similar methodology for field observations; *"researchers typically circulated throughout a designated study area recording vehicles authors of such studies acknowledge that their approach does “not track individual devices and therefore may count some micromobility vehicles multiple times"* (James et al., 2019; Fang et al., 2018, quoted in Brown et al., 2020).

To avoid recording the same e-scooters more than once, my approach was to have a linear route with some "hotspot" locations I put as goals. The route I chose in order to get to these hotspots was more random since I wanted the movement as a pedestrian to be as natural as possible without following a map at all times. Observations were also done on two different days, at different times during the day in each city, to further avoid recording the same e-scooters more than once.

Figure 2.10: Homogenous parking of e-scooters blocking pedestrian right of way on pavement in Oslo. Most likely placed by an operator employee.

I did not attempt to distinguish between e-scooters parked by users or placed out by operator employees in the analysis because I concluded that the placement by both could either way be categorised as improper. One way to identify whether a user did the parking or not was often how operator employees lined up the e-scooters

tight next to each other and in a pretty homogeneous manner (see figure 2.10). However, these kinds of line-ups were in some cases observed done on greenery or blocking the pedestrian right of way on pavement. Thus, making it an improper parking according to the defined attributes I followed to define improper parking in the analysis (see figure 2.6).

2.4.6 Observations' Time Duration & Distance Covered

The field observations took place in Oslo and Fredrikstad during two days in each city. They covered both mornings and afternoons, beginning and end of the week (30 minutes break was done each day).

Thursday the 15th of April, 16:30 - 18:30 / 2 hours: Fredrikstad (4,5 km)
Friday the 16th of April, 10:30 - 14:30 / 4 hours: Oslo (11,5 km)
Monday the 19th of April, 15:30 - 19:30 / 4 hours: Oslo (6,2 km)
Tuesday the 20th of April, 09:30 - 12:30 / 3 hours: Fredrikstad (15 km)

The total distance covered was approx. 19,5 in Fredrikstad and approx. 18 in Oslo.
Total time spent was 5 hours in Fredrikstad and 8 hours in Oslo.

2.4.7 Critique of the Field Observation Approach

A critique of the approach in the field observations is that the time spent and distance covered in each city could have been better planned, so that it was the same for both cities. I acknowledge that the results of this approach could have been more structured if I had chosen a more fixed route, in terms of distance covered and comparing the two cities.

A different approach that could be done in further studies might be to have only two fixed hotspots, one as a starting point and another as a destination. This could have made it possible to have a better-structured approach. However, having in mind that Oslo is a significantly bigger city with a much higher number of e-scooters, spending more time there can be seen as logical. The operator's distribution area in Fredrikstad was also smaller, so covering a bigger area with e-scooters was more manageable, though the smaller number. After all, this might not have made much of a difference in terms of the analysis and the comparison. The reason for the longer distance covered, but the shorter time spent in Fredrikstad is precisely due to fewer e-scooters and thus less time spent taking photos.

Some cases were more difficult to identify whether the parking was proper or improper. For example, some pavements were too narrow to have a furniture zone but had smaller pavement signs for retail or other odd objects (see figure 2.11). Even though this was in the passageway of pedestrians, e-scooters were in several cases parked in a way that did not conflict with people's accessibility. E-scooters observed parked by such signs were thus categorised as proper, as long as they did not block others' right of way.

Figure 2.11: E-scooter parked by pavement sign on a narrow pavement in Oslo.

A critique of this is that the pavement signs themselves were incorrectly placed and could also be blocking the pedestrian

passageway, as well as being a possible hindrance for people with disabilities. However, this is a question of whether the e-scooters were incorrectly parked or not at the time and place such signs were present. This could mean that the user of the e-scooter might have chosen a different location to park if the pavement signs already did not create a form of "shield" on the pavement. In general, the observations followed the idea that e-scooter parking would always be labelled improper if there was just a tiny chance of obstructing people with disabilities. However, there is always a chance that some of the observationes could have been even stricter in order to promote the interest of walkability for all users in the public space.

Figure 2.12: A statue of the Norwegian writer Henrik Ibsen keeps an eye on parked e-scooters in front of the National Theatre in Oslo.

CHAPTER 3: PLANNING FOR THE LIVEABLE CITY

3.1 Applying Urban Planning Theory

In this chapter, theory based on urban planning theories and principles will establish the framework and context of the challenges that are facing cities of today. Concepts of urban design theories are applied to define aspects for planning a liveable city with e-scooters in mind. The structure starts with the general basic principles for creating good and liveable public spaces through spatial designs. Further, concepts of public spaces, sustainability and mobility are presented and elaborated. The theories chosen are meant to be relevant for the challenges related to e-scooters, and parallels between the theories and e-scooters are occasionally combined.

3.2 Urban Design Theories

Urban structures are some of the factors that are affecting people's mobility patterns, accompanied by numerous other impacting factors (Hanssen et al., 2015). It is whether the streets and places are designed for pedestrians, bicycles or motorised vehicles that primarily affect this use. In the 20th century, cities were first and foremost designed for the use of private cars, with the construction of high-capacity motorways and plenty of parking lots. This was a way of promoting the development of the transportation system that encouraged people to travel by cars.

Today, the development is moving in the direction of changing this past trend of urban design through planning for sustainability. We see a rise of compact cities that require less transportation but at the same time more flexible ways of transportation, such as well-integrated public transportation networks and the introduction of shared mobility (Cervero et al., 2017).

Ian Bentley, in his *Responsive environments: A Manual for Urban Designers* (1985, quoted in Carmona et al., 2010: 9), stated that the behaviour and the choices people make is affected by the built environment and design of public spaces in terms of:

- *Places accessible for movement and use.*
- *Available range of uses*
- *The understanding of legibility, the opportunities a place offers.*
- *The robustness of a place and the degree it can be used for different purposes*
- *Whether the detailed appearance of the place makes them aware of the choices available*
- *Their choices of sensory experience (richness)*
- *The extent of which they can put their own stamp on a place (personalisation)*

Democracy, flexibility, accessibility, and the opportunity to choose are key words when advocating for how the built environment can affect its surroundings and use. These are essential factors that urban designers ought to have special attention to in the seeking of creating environments where the users easily and liberally can adapt to the wanted sustainable development. *"The built environment should provide its users with an essentially democratic setting, enriching their opportunities by maximising the degree of choice available to them"* (Bentley et al., 1985: 9, quoted in Carmona et al., 2010: 9).

The focus on democracy, accessibility and freedom have been repeatedly within advocators for urban design principles. Francis Tibbalds, former president of the Royal Town Planning Institute and founder of the UK-based Urban Design Group, suggested ten principles (Carmona et al., 2010: 9):

- *Place matter most*
- *Learn the lessons of the past*
- *Encourage mixing of uses and activities*
- *Design on a human scale*
- *Encourage pedestrian freedom*
- *Provide access for all*
- *Build legible environments*
- *Build lasting environments*
- *Control change (incrementally)*
- *Join all together*

While it is the combination of these principles together that makes up the guide for urban design, some might be seen as especially essential. For instance, design on a human scale and the encouragement of pedestrian freedom are two key factors that practitioners may seem to have overlooked during the past century. As the use and prioritisation of the private car have made its noticeable stamp on cities' urban design and infrastructure.

When talking about planning for public spaces, it is also essential to reflect upon what kind of places we are creating. Carmona et al. (2010: 10) quotes the British government publication from 2000 - *By Design: Urban Design in the planning system: Towards Better* Practice (DETR/CABE 2000), identifying seven objectives regarding the concept of place:

- *Character - a place with its own identity*
- *Continuity and enclosure - a place where public and private spaces are clearly distinguished.*
- *Quality of the public realm - a place with attractive and successful outdoor areas.*
- *Ease of movement - a place that is easy to get to and move through.*
- *Legibility - a place that has a clear image and is easy to understand.*
- *Adaptability - a place that can change easily.*
- *Diversity - a place with variety and choice.*

The design of streets and public spaces affects people's behaviours when they are moving through these spaces. We want to shape these places the way we want them to be used. Some public spaces are social places that promote public life, where people meet and interact. Other public spaces are mobility spaces where people mainly travel through to get from one place to another. Social places are usually those places people travel to. At the same time, some places tend to have a more complex use and be both mobility and social spaces, where people both interact and travel through.

Urban plazas, parks, and transportation hubs are examples of complex use of spaces where various ways of mobility and social interactions overlap. In these spaces, conflicts between the two uses of space could cause unrest and disturbance that further could interfere with the overall visual experience. The separation between pedestrians, bicycles and cars is examples of how the social spaces are physically divided by different ways of mobility (Carmona et al., 2010). It has been common to separate the various movement systems into designated areas of the public space. Most streets are for cars, bicycle lanes for bicyclists, while sidewalks, plazas, and parks for pedestrian use.

E-scooters on the other hand, is yet to finds their belonging in the public space. Today it seems that it is part of both the social and mobility space, while it is experienced as a dominative disturbance in both (Karlsen et al., 2021). It is a mode of transportation that belongs in the mobility space, but it breaks into social spaces both as a physical obstacle and a visual intrusion when parked wherever. In contrast to the car, which traditionally has had designated areas for use and parking in the city, the e-scooter finds itself unpredictably anywhere accessible. It divides the public social space in new ways that are causing barriers different from those caused by cars.

> *"The structure of the city should invite and encourage public life, not only through its institutions, but directly and symbolically through its public spaces … No one should be excluded unless they threaten the balance of that life"* (Jacobs, A. & Appleyard, D., 1987: 116).

Are e-scooters rightfully victimising themselves for exclusion of the public space when causing these new barriers, and by doing so, threatening the public life as we know it? The solution could be to adapt and change the already established structures. Carmona et al. (2010) stress the need for a *"multi-purpose public space network"* where there is a significant overlap of the social space and mobility space that is only separated if absolutely needed.

This new way of thinking about user interactions in the public spaces is a concept that still awaits its own form of a framework in urban design. There are these new spaces of interactions and relation caused by e-scooters that are awaiting their expression in form, and that challenges present established structures of the public realm. To facilitate these changes and adaptions, measures for recalibration of people's perceptions of public space might be necessary.

3.3 Spatial Rights

Everyone has the right to use and be present in the public space, which means that you cannot expect or demand to be alone while walking down a public pavement. The American urban planner Kevin Lynch (1984) described this as the first of five spatial rights. The second is the right to behave freely and take in use the facilities of the public space without appropriating them. We have explicit or commonly understood limits in the society that aims to prevent unwanted use and makes us aware of what is appropriate or not in the realm of public space. At the same time, someone's use can be limited by the expansion and power of other's use.

"All of us may walk and pull our carts along the pavement, but none may be too noisy or too violent, or block the passage of another" (Lynch, 1984: 207).

The third spatial right described is the appropriation of a place by making your use prior to others and preventing its facilities and resources from being available to anyone but yourself. It can be described as the appliance of selfishness and ignorance of a place's usage. The fourth spatial right is about the right of modifying a place, whether it is on a permanent basis or not. If you really want to take advantage of a public place by applying any form of change, you are within the public realm free to do so, even if this is challenging or preventing other's modifications to that same place. It could even mean destroying or damaging a place, intentional or unintentional. The right of disposition is the fifth and last of the spatial rights; the possibility to give away one's right of a place's usage to whomever if desired. (Lynch, K. 1984).

Congress for New Urbanism, created in 1993, published the Charter for New Urbanism advocating for a restructuring of public policy and practices for development. One of their suggestions was for cities and towns to be *"shaped by physically defined and universally accessible public spaces..."* (Carmona et al., 2010: 10).

Carr et al. (1992, quoted in Carmona et al., 2010) identified different forms of access as visual, physical and symbolic, being a passive way of excluding people. The visuality of a place gives people the ability to see what a place and its' content looks like and gives them a first impression to judge by. Physical access is whether a place is accessible through being visible. A place with barriers that exclude users from entering makes it an inaccessible place to the public. Physical design strategies could therefore be responsible for the exclusion of some users in the public space.

The use of symbols may give users a sense of being welcomed or not through visual hints suggesting what kind of users are preferred in that specific public space. Symbols could be the use of signs describing forbidden use that is seen as discomforting to the place, aiming to make the people of that use feeling uncomfortable or uninvited (Carmona et al., 2010).

A more active way to exclude people is easier to carry out on privately owned property through own set regulations. In the public space though, this can only be done through active use of legislation on what kind of use allowed or not, giving the authority to law enforcement like the police to engage with the use and carry out the implemented laws. The 'policing' of public space ought to be in the interest and protection of the citizens' freedom in the form of a '*policed* state'. If only the protection is given to the powerful and those with private interests, we are looking at the kind of unwanted legitimacy of a '*police* state'. (Carmona et al., 2010)

3.4 User Congruence

The use of the public space varies in different cultures, whereas in some parts of the world, the right to a piece of land is only relevant when the user is present. This means that the right to use and appropriation is gone when the place is left for others to take (Lynch, K., 1984).

User congruence is about the extent of a user's ownership of a place they occupy (Lynch, K., 1984). How is the quality of a place affected by a static contra dynamic ownership in the form of usage or presence? How much time spent in a place is needed in order to feel some sort of personal connection, responsibility and security? Do house owners own the street they live by? If so, how long do they need to live by this street to get a feeling of strong ownership?

> *"... progressive responsibility for place is an effective means of general education, both intellectual and moral" (Lynch, K., 1984: 211).*

One certain thing is that the longer time someone spends in a place, whether it is live, work or travel through on a regular basis, the better knowledge they have about that place. This gives a bigger motivation for these people to do maintenance or improve the quality of that place with the use of the most suitable and relevant knowledge that has arrived from personal belonging and affection.

> *"Management should be exercised by those with the best information, yet information includes values, feelings, and experiences as well as facts and techniques. Local users are rich in the former" (Lynch, K., 1984: 210).*

Given the freedom of different ways someone can change a place through static and dynamic presence, conflicts may easily be triggered due to disagreement of use in the place. Those with a static presence, exercising the management, might see their ownership as superior to those with a dynamic presence, which tends to come and go unconditionally. The entire concept of rental e-scooters, for instance, is the freedom of having that exact dynamic presence in places, allowing the users to travel there and leaving behind the e-scooter in any part of the public space. The conflict in this case, lies in the static user's frustration caused by the naivety and ignorance of the dynamic users of e-scooters. There is a breach of the traditional established norms that exist in the static user's place, though its public realm, which further puts the harmony for a sense of place and belonging out of balance. There might be a sensation of stress and uncertainty caused by the unstructured development with the absence of form and stability, threatening peoples pre-established patterns and criteria.

Figure 3.1: E-scooter parked on pavement in a residential neighbourhood in Oslo. A poster was placed on the fence saying: "This is not a parking-spot for e-scooters! Someone lives here!" (Photo: Frøydis Hollakleiv, 2021).

3.5 Measures for Control

"User control must not deny others the basic opportunities that the owners themselves enjoy" (Lynch, K., 1984: 208). Due to the feeling of intrusion and disturbance, residents or static users of a place may tend to urge the exclusion of those having a dynamic usage of that same place. When thinking of the concept of the public realm and the common spatial rights, everyone ought to have the right to take advantage of the public space as they desire to use it.

However, there is a difficult balance between how everyone's needs are met through compromises when static and dynamic users share the same public place. Are users of e-scooters enjoying the same opportunities as those who want to use the pavements and streets where they live, or is this a use of such a different nature that it exceeds existing opportunities and creates new ones? Static users might see it as a lack of compliance with those already fundamentally established norms for how they want streets and pavements to be used in their public space. Further raises the question of whether there is a need to loosen up those established norms, or a need for better adaptation and implementation by new forms of dynamic use such as the e-scooter.

As new technology develops, we experience a constant change of values and situations that requires the adaptation of control (Lynch, K., 1984). When changing our cities in the light of sustainable development, this adaption of control is crucial for implementing new technologies that are affecting people's way of life. With new forms of micromobility in mind, cities are experiencing a change in how streets and public spaces are used. Thus, a need for an adaptation of how they are controlled. This could create a new public realm where users would be introduced to new measures for control, which might challenge the way control of the public space is experienced today. This is why there is a need for measures that can make it easier to predict such radical changes so that people can be aware of them. Certainty is a way of control, *"the degree to which people understand the control system, can predict its scope, and feel secure with it"* (Lynch, K., 1984: 211).

Physical measures can be taken to secure spatial control of public space. This could be by the marking of boundaries through vegetation, fencing or signs. Additionally, manipulation of access could be carried out using walls and other physical barriers to actively prevent and hinder movement. Another way of control is through symbols like road markings guiding movements through streets and the public space. This relies on the trust in users to have respect for the set guidelines made to maintain spatial control (Lynch, K., 1984).

"There must be laws regarding the rights of ownership, common understandings about group territory and personal space, education in proper spatial behaviour, a record of spatial rights" (Lynch, K., 1984: 214). Spatial conflicts are less likely to occur when clarifying and making visible the social norms of a space's spatial rights, making it intelligible who is in charge of the space and how to behave correctly (Lynch, K., 1984). Central authorities are those we dependently rely on to conciliate conflicts while minding the interests of the present, potential and future users of the public space, effectuating the spatial rights for all. Nevertheless, we find ourselves in a liberal and democratic society where we cherish freedom and the right to act independently. Simultaneously we get offended when others cherish that same freedom to the point where it overlaps our own.

"The spectacle of human diversity is one of the attractions of the great city. Applying that minimum of unobtrusive control which is necessary to keep heterogeneous users at peace with each other, and yet feeling free, is a delicate art. Tolerance supports that art - learning ways of coexisting in space and time" (Lynch, K., 1984: 214).

3.6 Urban Infrastructure

"Across the globe, the rise and popularity of reclaiming public space from private vehicles, calming traffic, and creating great, walkable neighbourhoods are all manifestations of this desire to create better, more people-oriented communities" (Cervero et al., 2017: 8).

Urban transformation and recalibration have probably become the most dominant concern for urban planners and urban development. We have seen a change in the past decade where we have been moving towards bringing urban spaces back to the walkable city for pedestrians on a human scale. "*Vehicular movement space has over time overwhelmed social space"* (Carmona et al., 2010: 83). It is now about reclaiming the city from cars and infrastructure barriers disturbing the social flow in public spaces. While still maintaining a variety of transportation options, pedestrians are in the centre of whom we are planning for in the walkable, people-friendly, and green cities of the future.

> *"Reacting to the emphasis on cars, there has been a new concern for the pedestrian, and a desire to create pedestrian dominant environments - environments accessible to cars, but designed to suit the scale, pace and comfort of pedestrians - and environments facilitating use by a range of modes of travel".* (Carmona et.al., 2010: 23).

Spaces should be reclaimed from the car to promote "*life between buildings"* and the optimisation of public spaces for social interactions and daily activities, as the Danish urban designer Jan Gehl advocates for in his book (Gehl, J., 2011, quoted in Cervero et al., 2017: 20).

Gehl, J. (2010: 9) argues that "*every city got precisely as much traffic as space would allow,* emphasising that building more roads and areas designated for cars will invite people to drive cars and stimulate more traffic in the existing infrastructure of cities. Basically, meaning that the way infrastructure is designed is controlling who is using it and how much.

> *"Better communities are those that consider people, the environment, and the economy in the design of the transportation networks … Connecting people to places requires environments that promote traffic safety, clean air, and recreation"* (Cervero et al., 2017: 18).

Some roads in the urban space will always be needed. However, several urban planning theorists and commentators have advocated for reclaiming streets as social and connecting elements rather than dividing (Carmona et al., 2010).

> *Focusing on accessibility and, relatedly, places leads to an entirely different framework for planning and designing cities and their transportation infrastructure. It's been said that planning for the automobile city focuses on saving time. Planning for the accessible city focuses on time well spent"* (Cervero et al., 2017: 3).

Planning the accessible city is planning for a city that is not just all about getting from point A to B as fast as possible, but planning for a liveable city where people want to spend their time and leaving with a feeling of time well spent.

Even though new urban developments are heading towards more accessible, walkable, and people-friendly public spaces, we cannot forget nor exclude the need for accessibility for service vehicles. This necessity for the provision of business deliveries, waste disposal, emergency access, maintenance etc., is still needed in the urban context. The requirements to these services can be opposing and create gaps in the development of urban designs aimed to be in favour of pedestrians. Service vehicles need wider streets and accessible service points that take up larger areas in the public space. *"Servicing arrangements should be integrated with care and should not dictate the overall layout or character of an area"* (Carmona et al., 2010: 239).

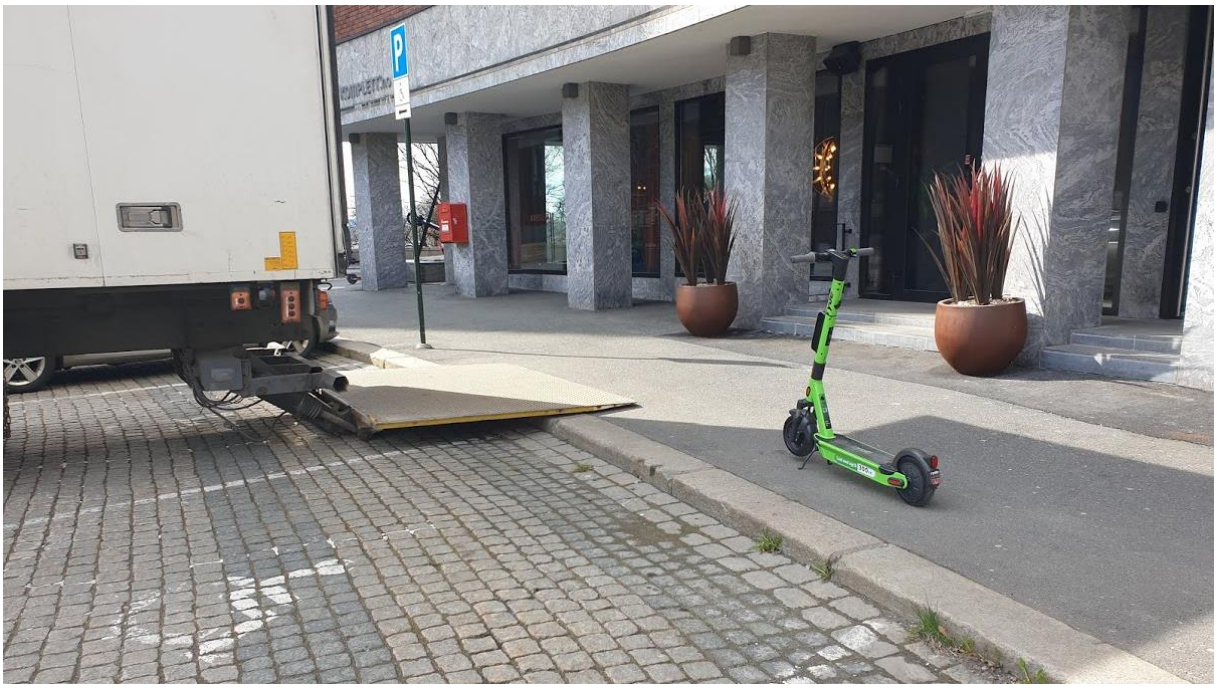


Figure 3.2: E-scooter parked on the pavement next to a loading zone and designated parking for people with disabilities.

3.7 Technological Change

Through urban design, cities can be re-shaped and fitted for our modern lives surrounded by constantly developing technology and breakthrough connectivity in the age of digital revolutions. The way we are living today has dramatically changed in just some decades of digital development. These should be some of the reason why urban designers should react to the new era that is in progress.

"Urban design is not simply a passive reaction to change: it is - or should be - a positive attempt to shape change and to make better places. The structure of places matters and the need is to design well-functioning, people-friendly, sustainable places" (Carmona et al., 2010: 46).

It could seem that places in the public space work poorly in cases where the physical structures are overdue with the development of how it is used in new progressed ways. Loukaitou-Sideris (1996: 91, quoted in Carmona et al., 2010: 11) describes how the qualities of places can be affected by "cracks":

- *The gaps in urban form, where overall continuity is disrupted.*
- *The residual spaces left undeveloped, underused or deteriorating.*
- *The physical divides that purposefully or accidentally separate social worlds*
- *The spaces that development has passed by or where new development has fragmentation and interruption.*

"*Rather than the technology itself, it is the pattern of infrastructure to support that technology - and subsequently social choice - that has been instrumental in directing spatial patterns of development"* (Newman et al., 2009, quoted in Carmona et al., 2010: 24). Technological development though is being less adapted for in the city's physical infrastructure, and it seems that the current urban design is getting less consideration in terms of the rapid technological change.

New technology might not adapt to the current urban patterns of infrastructure as innovation is constantly ongoing. Thus, there is a need for a change in the infrastructure itself to adapt to the rapid changes and ongoing revolutions of technology. Without such adaption, there could be constant conflicts in the urban space due to gaps in the existing spatial designs that do not meet current nor future technological standards and necessities.

3.8 Urban Mobility

"Movement is fundamental to understand how places function" (Carmona et al., 2010: 201). People's travel routes and daily routines contribute to the demand for developement in urban places and their public spaces, creating central hubs for social and cultural interactions and retail. Places located in such areas have an increased requirement for holistic designs and the inclusion of everyone wishing to be part of it.

Though both vehicular and pedestrian movements are circulation based, the latter allows for easier access to those offers of social, cultural, and economic interactions along the way. *"Walking is a form of transport, but it is also a potential beginning or an occasion for many other activities"* (Gehl, J., 2010: 120). As a pedestrian, you get the intimate experience of the travel in between, observing other humans up close and exposing the senses with smells, sounds and feeling of being part of a shared community. This provides the kind of urban life cities of today's sustainable oriented world strives for, bringing back what urban life really is about, interactions between human beings.

On the other hand, cars do not interfere with what happens between the origin and destination, but does have the advantage to travel seamlessly from point A to B (Carmona et al., 2010), as is the case for e-scooter. However, the physical nature of e-scooters is way more

flexible than cars, being able to access those same places as pedestrians, thus giving them the advantages of both vehicular and pedestrian movement. E-scooters can somehow be said to be perfect for efficient transportation through urban space, as it is an easily accessible form of mobility that moves faster than pedestrians and smoother than cars.

> *"Clean technologies are enabled by low-impact patterns of growth. Electric vehicles with limited driving ranges become more viable in compact, mixed-use settings of short-distance travel"* (Cervero et al., 2017: 44).

E-scooters may also just be used as part of the total travel distance, giving the users extended liberty to transfer to any form of transportation if needed on the way. By doing so, users of e-scooters are transforming themselves to take part in the movement system for pedestrians. This gives them the same expectation as the common pedestrian; an expectation for continuity in urban space and the quality of connections between destinations (Carmona et al., 2010).

When designing for the prioritisation of pedestrian movement, car-dependent environments should be avoided in future planning to promote sustainable development better. *"Cars can be reconciled to systems designed to give pedestrians, cycling and public transport priority, but it is difficult for these other modes of travel to fit into systems designed for cars"* (Carmona et al., 2010: 235).
On this topic, Carmona et al. (2010) list five sets of basic requirements for how to achieve a good road and footpath design:

- *The maintenance of safety and personal security by the reduction of speed limit combined with the desperation between road and footpaths.*
- *Increasing permeability for all modes of transportation with the prioritisation of pedestrians in mind. Making it easier to access for all users with a more open design of the public space.*
- *Creating more direct and convenient routs to the places people are traveling to through their desire lines, promoting directness.*
- *Instead of roads or cars, let defined places, landscaping and buildings dominate the design for an attractive developement in the local context.*
- *Increase legibility by designing layouts that clarify the overall structures and local visual references.*

(Carmona et al., 2010: 235)

Placemaking is essential when trying to move on from the focus of just mobility places to enjoy the places of transit. In that way, social capital, safe and walkable cities and equity could be improved. "*Such effects will only be compounded by the use of participatory planning, because the local people who help plan a change in the community will be more invested in its success"* (Cervero et al., 2017: 33).

> *"The most comprehensive approach to benefit communities is the complete streets concept, a street designed for all users, not just for drivers, but also for bicyclists, transit users, and pedestrians of all ages and abilities"*
> Cervero et al. (2017: 24).

Further, sidewalks and plazas should promote walking and be safe and accessible for pedestrians, including those in a wheelchair and with disabilities who require universal design. "*Increasing the density and connectivity and improving the configuration of the street network also promotes walkable cities"* (Cervero et al., 2017: 26).

3.9 Shared Space

To integrate the needs of various forms of movements, places on a local level require careful designing and consideration. Pedestrian areas that are accessible by cars should be protected in a way that benefits walkability and the safety of all kinds of movement. That is being the concept of shared spacers; pedestrian and vehicular movement sharing the same surface (Carmona et al., 2010: 108).

Shared spaces have been used in cities around the world to increase traffic safety by erasing the visual and physical barriers in places where various modes of transportation meet. This has been proven to make people more aware and precautious while moving in places with applied shared space. Cervero et al. (2017) refer to the first experiment for shared space done by traffic engineer Hans Monderman in Oudehaske, the Netherlands, in the 1980s, quoting that:

> *"Shared spaces epitomise how balancing mobility and place-making can benefit communities. The experiment reestablished interpersonal awareness between all road users and reclaimed streets for pedestrians, allowing them to move and interact with another in new ways".*
> (Cervero et al.,2017: 22)

The design of shared space is about give and take, the negotiations between the different users and their prioritisations in the public space.

The most common ways to implement shared space is to remove the traditional road hierarchy and the segregation of vehicles, pedestrians, cyclists and others, traffic signs, signals and road markings. Instead, shared space promotes an *"integrated, people-oriented understanding of public space, such that walking, cycling and driving cars become integrated activities"* (Carmona et al., 2010: 109). It promotes pedestrian activity and aims to make drivers feel like they are intruding on a place that is not meant for vehicles. In general, the concept of shared space is about making car drivers more aware of their surroundings and slow down the speed.

The development of shared space varies in countries, some of which are different systems of legal liability. According to Carmona et al. (2010), most English-speaking countries operates with a fault liability system, i.e. the one causing the fault pays compensation for losses related to road traffic collisions. Other countries have a risk liability system, meaning that if a conflict happens between a motorised vehicle and a vulnerable road user, the legal assumption is that motorists are liable for injuries and damage of property, even though bicyclists or pedestrians might have caused the fault.

3.10 Parking

Cities have had well-integrated parking regulations for cars with the use of different zones and designated spaces in the streets. This has made strong norms for citizens regarding correct behaviour and etiquette for car parking (Brown et al., 2020), and cites' infrastructure and design of today can be strongly seen adapted for the use of cars. In terms of urban land use, parking has for some time been taken up some of the largest areas. These are spaces that have limited and been at the expense of other land uses like housing, retail, offices, plazas, and public spaces (Cervero et al., 2017).

"Space for parking is required within all environments" (Carmona et al., 2010: 238). The problem with parking is how to integrate it well as part of streets and public spaces, while simultaneously being near developments in the urban context. Parking should not dominate a place but ought to provide sufficient availability for contemporary needs.

When designing for attractive and integrated parking in the urban space, the visual intrusion can be limited through good landscaping and quality materials. Last but not least, parking needs to be safe and secure (Carmona et al., 2010).

Parking spaces for cars has had a decreasing demand in dense cities in the past years, especially where more dwellings are sold as car-free housing without parking space (Carmona et al., 2010). The use of car clubs and carpooling in some cities and developments have made it possible to live in the city while having the opportunity to get a lift when needed. Being collectively owned by the members, the vehicles provide cooperation of organised transportation and mobility.

With this concept in mind, e-scooters could be said to be a form of the same cooperation of urban demand-based mobility, though the users are unorganised and not dependent on each other. Could some of the issues with the distribution and parking logistics of e-scooters be eased with a more organised approach similar to the one's of car clubs and carpooling? This would probably demand a higher level of cooperation between operators, presently competing with each other in the race of users roaming the streets for e-scooters.

CHAPTER 4: ANALYSIS OF RESULTS

4.1 Survey on people's Mobility Habits and Perceptions on E-scooters During the Covid-19 Pandemic

The following presented in this section are the results of the analysis from the online survey.

4.1.1 Survey Demography

The total number of respondents with postal codes in Oslo were 434 and 208 from Fredrikstad.

Among the total of 642 respondents with postal codes in Oslo and Fredrikstad, 55% were females, 44% males and 1% identified as other. The age balance ended up having a majority of older citizens, with the age groups 55-64 and 65 or older together counting nearly 44%. All age groups were represented overall, but none in the age group 17 or younger were from Oslo. 73% had a higher educational level, which could reflect the age balance. The respondents in this survey are thus not completely representative, as SSB statistics shows that 34,6% of Norwegian citizens have a higher education degree, while in Oslo, this applies to around 50% (SSB, 2020).

Concluding that the respondents in this online survey do not fully represent or match the actual population, but still gives an indication on opinions and habits that exist among the population.

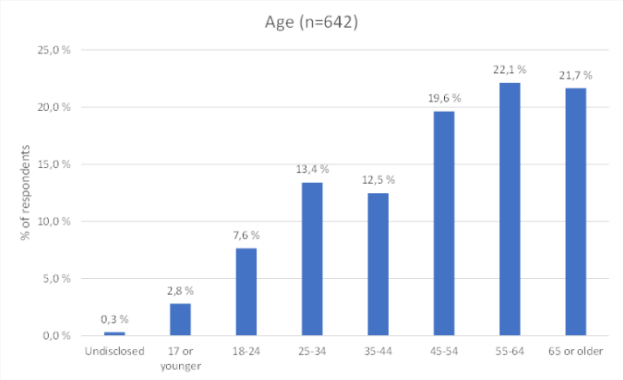


Figure 4.1: Age distribution among all respondents analysed.

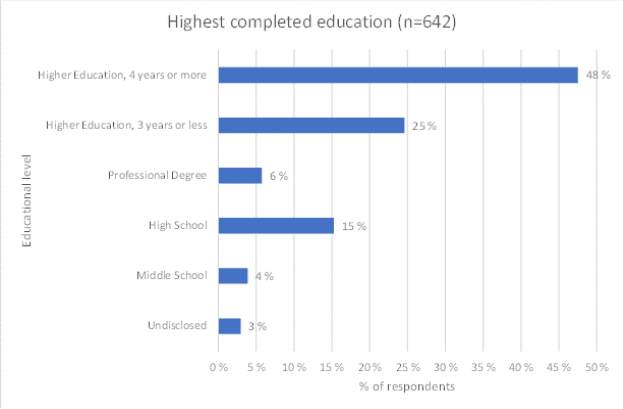
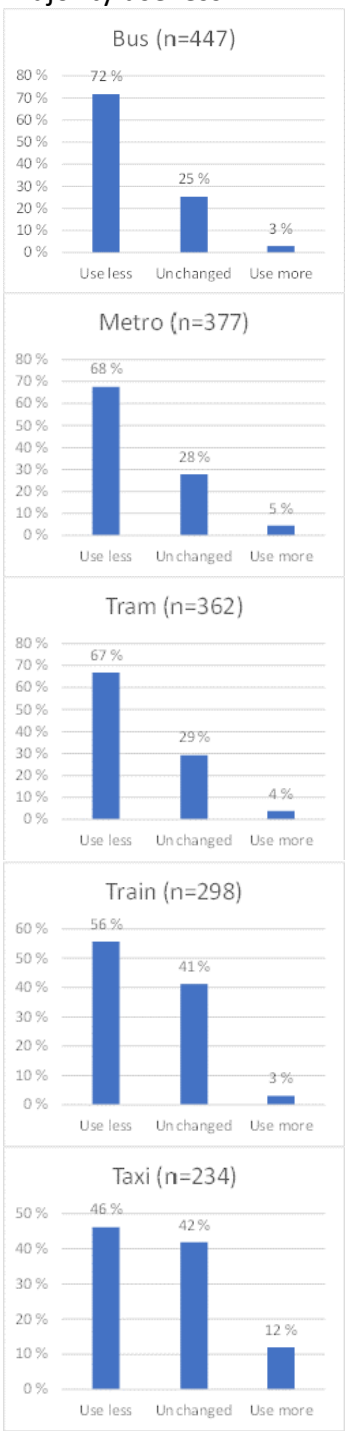
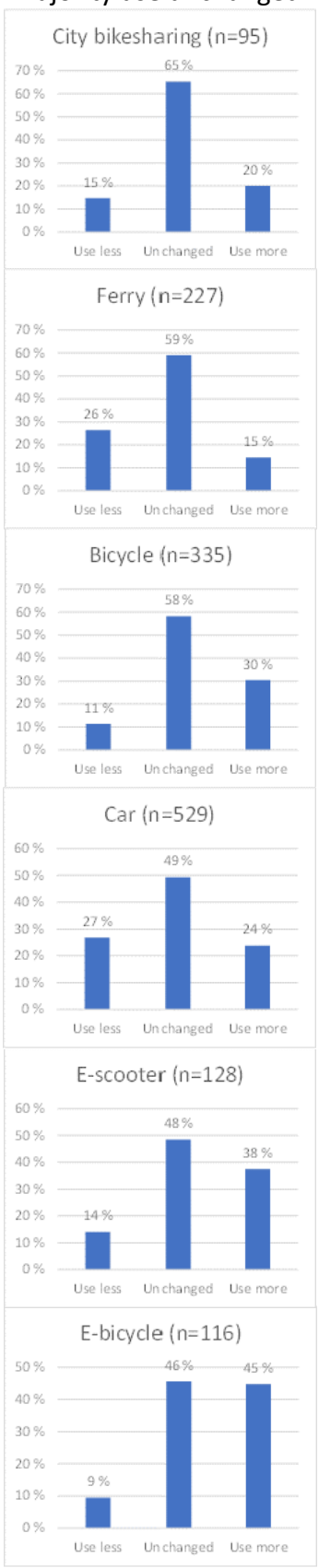


Figure 4.2: Educational level among all respondents analysed.

Majority use less:



Majority use unchanged:



Majority use more:

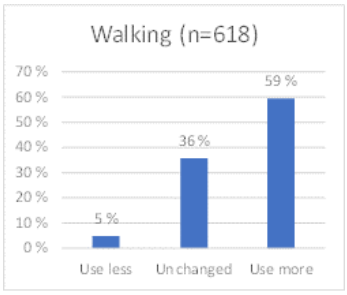


Figure 4.3: Diagrams display changes in mobility habits among users of the different modes of transportation during the past year.

The settings in the survey for these questions were not made mandatory, so some possible data may not have been collected, since respondents could choose to skip this part. For instance, the number of respondents having used an e-scooter during the past year (147), does not match the number in this section (128).

4.1.2 Changes in Mobility Habits

How peoples' mobility habits have changed during the last year was analysed with all 642 respondents. Figure 4.3 shows how the respondents' mobility habits for different modes of transportation have changed during the past year with the covid-19 pandemic. The different modes are arranged between those that have been used less, unchanged and more, starting on top with those with the highest percentage. Only those having used the various modes of transportation during the past year are represented in the diagrams, based on all 643 respondents. The diagrams show a steep decline in public transportation with buss having the highest number of respondents using less (72%).

Of the modes having the most percentage of unchanged use, city bike-sharing has the highest (64%), followed by ferry (61%) and bicycle (58%). Both e-bikes and e-scooters have nearly half of respondents with unchanged use, but also have a high percentage of those using them more during the past year. Not surprisingly, the percentage of people walking more has a high increase. 55% of respondents in Oslo answered yes to having access to a car, while 80% answered the same in Fredrikstad. Former statistics indicated that 69% of households in Oslo and 95% in the former county of Østfold (Fredrikstad) had access to at least one car (TØI, 2014).

It is crucial to keep in mind that there might be other factors than the pandemic impacting these results. Still, they do fit the perceptions that fewer people use public transportation when asked to avoid crowds and stay home during the pandemic. As a result, this could have motivated or even forced people to look for other mobility alternatives, such as bikes, e-scooters or walk. It also corresponds to how most respondents of this survey replied to working or studying from home during the past three months.

4.1.3 Work/study at Home

2020 and 2021 have been years strongly impacted by the covid-19 pandemic and has affected people lives across the world. Peoples' mobility habit is one factor that has been expected to change due to lockdowns on a local and national level, resulting in many people working and studying from home.

Figure 4.4 shows that the majority of survey respondents (51%) always or often worked/studied at home during the past three months. This reflects the reality of strict lockdowns many Norwegians have been living with this year. It could also be seen as an indication of a smaller need for mobility during this period.

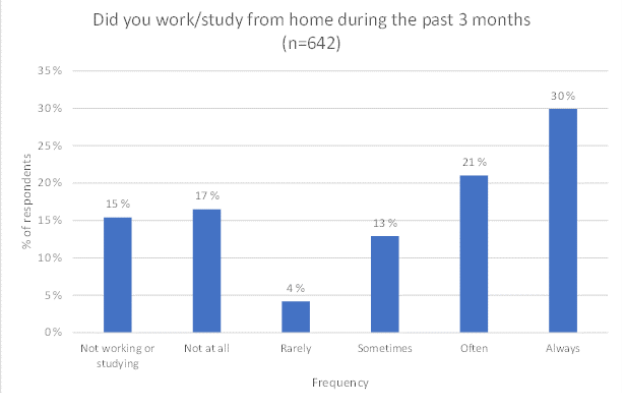


Figure 4.4: The diagram shows how frequent respondents had been working or studying from home during the past 3 months (April 2021).

4.1.4 Users of E-scooters

On the question "have you ever used an e-scooter?" figure 4.5 shows that 27% of respondents in Oslo answered yes, while only 4% indicated they wanted to try. In Fredrikstad, slightly more respondents said yes, while the percentage of those who wanted to try was much higher compared to Oslo.

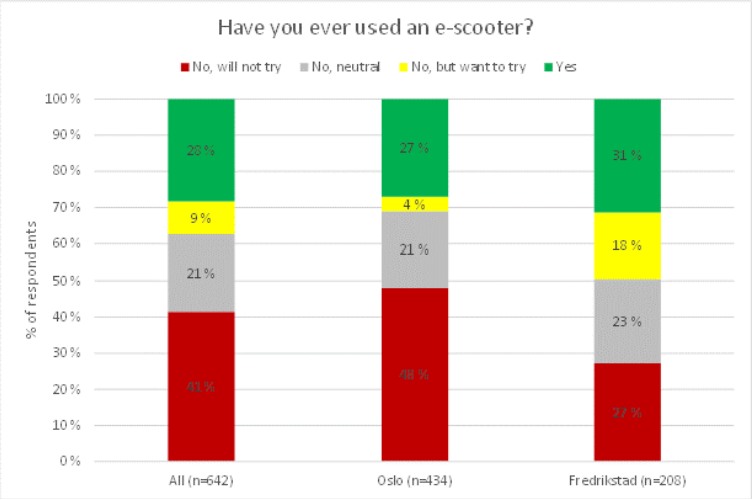


Figure 4.5: Diagrams showing all respondents combined, Oslo and Fredrikstad.

Of 182 (28 %) out of all respondents ever having used an e-scooter, 55% were male and 44% female. 21% were 24 or younger, 55% were 34 or younger, 32% were 35 to 54, while those 55 or older counted together for 13%. In comparison, among respondents who would not like to try an e-scooter, 8% were age 34 or younger, 30% were age 35 to 54, and 61% were 55 or older. The age group with the highest percentage of respondents among those who wanted to try an e-scooter were 55-64 (32%). The results for what age groups who are using e-scooters are close to validating former Norwegian research, which found that 67% of e-scooter users are younger than 30 and 8% older than 50, indicating that e-scooters are used mainly by younger age groups and by some few in senior age groups (Berge, 2019).

When comparing how the different age groups responded to ever having used an e-scooter, a majority of younger respondents answered yes. In comparison, a majority of older respondents answered that they would not try. Figure 4.6 shows a clear trend in how the different age groups responded in Oslo. This corresponds to former research on users and non-users of e-scooters (Berge, 2019).

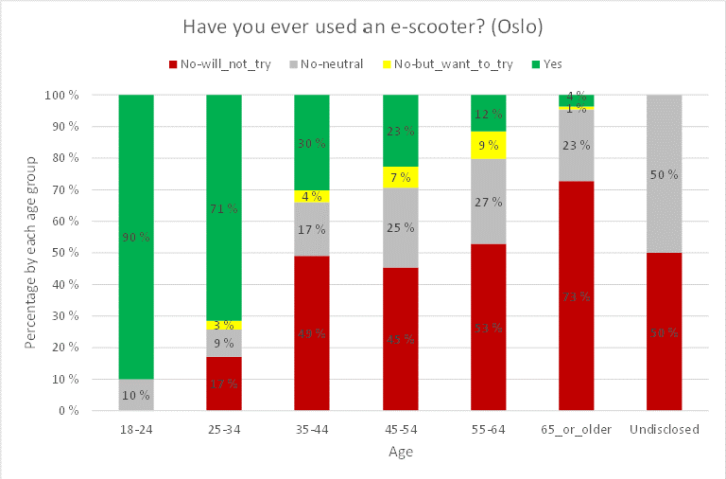


Figure 4.6: Respondents in Oslo having used an e-scooter or not. (n=434)

Figure 4.7 shows how respondents in Fredrikstad have a slightly different trend, with more of the older age groups both having tried and wanting to try an e-scooter. A reason for this difference between respondents in the two case cites could be due to the more significant impact e-scooters have had in Oslo since 2018 (Berge, 2019), while they were not introduced in Fredrikstad until September 2020 (Holøien, 2020).

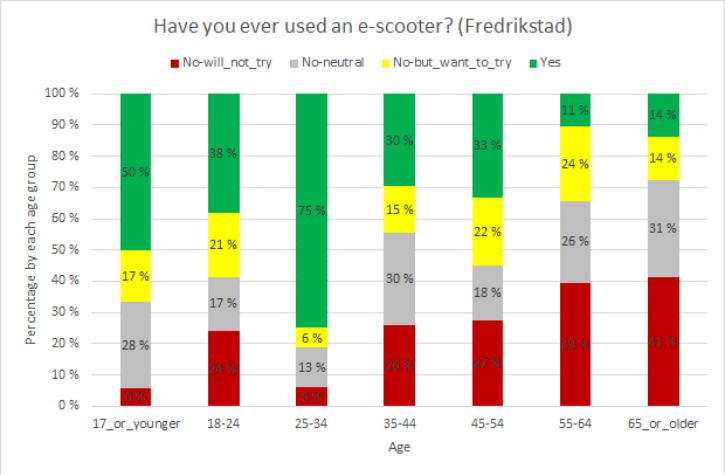


Figure 4.7: Respondents in Fredrikstad having used an e-scooter or not. (n=208)

Respondents were also asked about their travel distance between home and work-/school-place. More respondents with further travel commuting distance answered yes to having used an e-scooter. The number of users decreases with shorter travel distances (see figure 4.8).

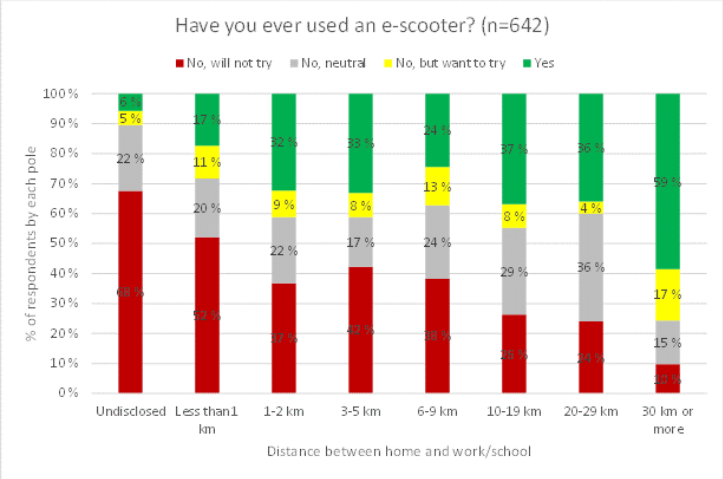


Figure 4.8: The diagram shows the relation of travel distance between home and work/school and user experience with e-scooter.

Of the 643 total respondents from Oslo and Fredrikstad, 147 respondents had used e-scooter at least once during the past year (since April 2020). Of these, 28 (19%) had used a privately owned e-scooter.

Figure 4.9 shows how often the respondents had used e-scooter during the past year. Among these users, only 19% have been using an e-scooter at least once a week. The Danish Road Traffic Authorities study also indicated that 19% used e-scooter at least once a week (Færdselsstyrelsen, 2020). This percentage differs from former research done in Oslo (Fearnley et al., 2020), which indicated that 70% of users during

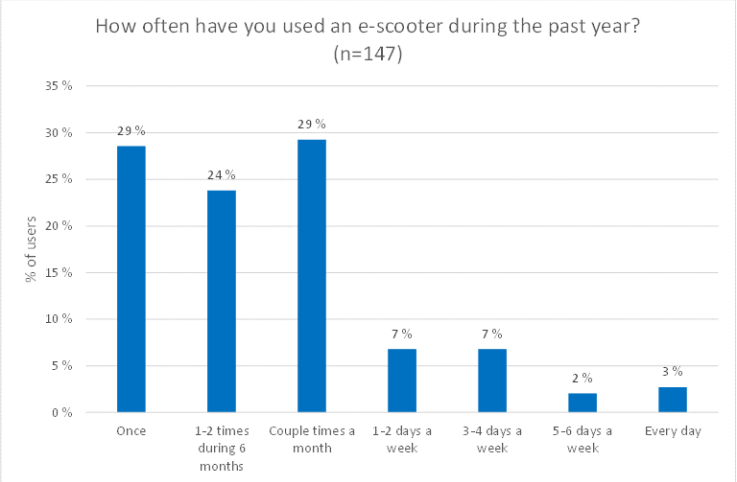


Figure 4.9: Respondents were asked what kind of driver they felt most like. They could choose multiple alternatives.

the summer and 42% during the autumn used an e-scooter at least once a week. The different results between the studies could be due to the covid-19 pandemic or other influencing factors.

Figure 4.10 shows that most users indicated that they behave like a bicyclist on their last e-scooter trip. Some also felt like a pedestrian and fewer like a car or moped driver. This indicates some of the complexities related to regulating e-scooters, as they differ slightly from the use of bicycles.

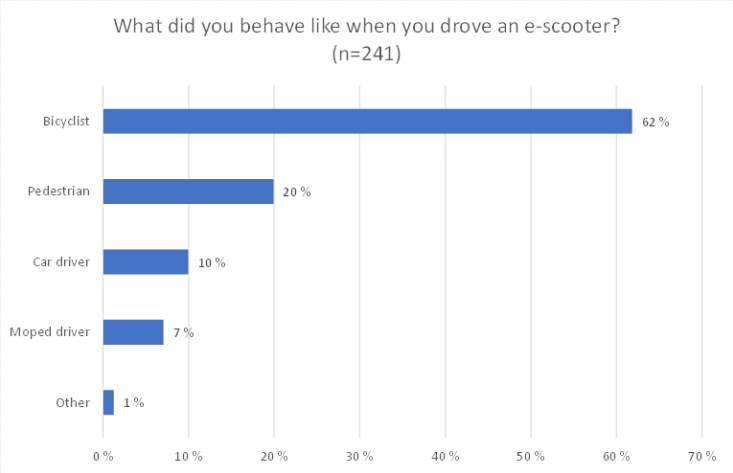


Figure 4.10: Frequency of e-scooter use during the past year among users during this period.

Figure 4.11 shows that nearly half of the e-scooter users responded that they parked on pavement on their last trip (48%). Eleven per cent parked by or in bicycle racks, while 11% indicated that they parked in designated parking for e-scooters. Former research on the effect of designated parking for e-scooters revealed that racks with the operator's logo attracted mostly e-scooters from that same operator, indicating a need for neutral racks (Karlsen et al., 2021).

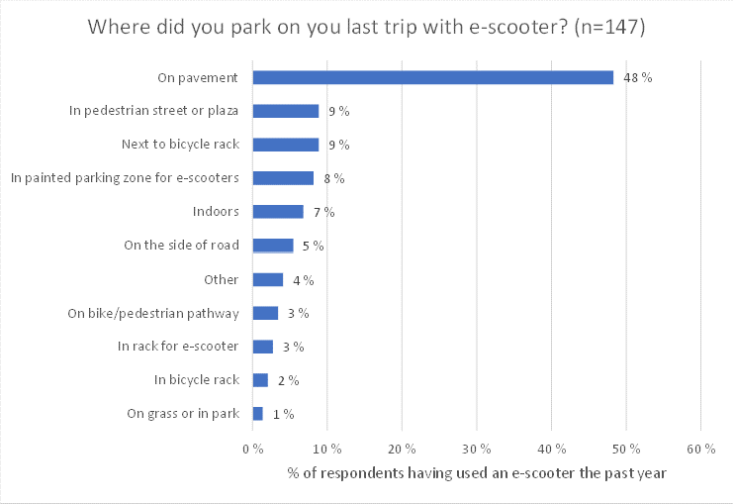


Figure 4.11: The diagram shows where respondents parked on their last trip with e-scooter.

4.1.5 Purposes of Use

Users of e-scooters were asked to choose up to the three most common purposes of their travels with e-scooter. Figure 4.12 shows that most respondents indicated "travel to meet friends or family", followed by "just for fun" and "to or from downtown". A common purpose was also "travel to work or school", which indicates that respondents in this survey used e-scooters for commuting, but primarily for leisure. Together work/school-related travels counted for about 16%. Only 6,5% chose "travel to or from public transportation stop" as a common purpose.

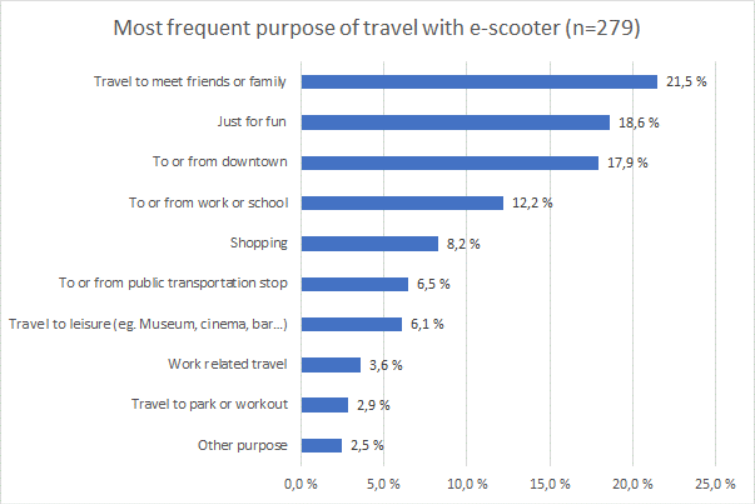


Figure 4.12: Purposes of travel with e-scooter. Respondents could choose up to 3 chooses.

Former Norwegian research found that there were more work/school-related travels (40%) than leisure, and 15% travels to/from public transportation stop (Fearnley et al., 2020). Previous research indicated that 11% travelled to public transportation stop on their last ride (Berge, 2019).

A Danish study reported that 51% of e-scooter rides were related to sightseeing and leisure, while 12% were related to commuting between work/school. To or from public transportation was 9% in the study from Denmark (Færdselsstyrelsen, 2020).

Respondents were then asked to choose all the reasons that applied to them for why they used e-scooter as a mode of transportation. Figure 4.13 shows that the most common reasons are that e-scooters are fast, fun, easy to use and efficient way to travel. Respondents also indicate that they appreciate the liberty to park.

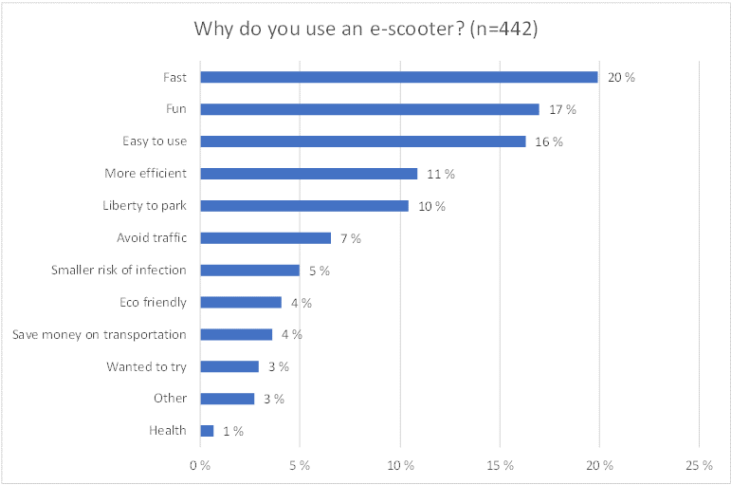


Figure 4.13: Reasons to using e-scooter. Respondents could choose all choices that applied to them.

4.1.6 Accidents

Of the 147 e-scooter users, 13 (8%) had ever been in an accident at least once while riding. Among these, 70% identified as male, and half indicated that the accident was their own fault, while the other half blamed other users or conditions. What was considered an accident was not explicitly defined. Former Norwegian research, where an accident was described as "*colliding with another road user, or falling off e-scooter*", indicated that 9,5% of users had been in an accident at least once.

The percentage of users replying to have ever been in an accident in this survey was lower than 14% indicated in other research that also asked the same question (Karlsen & Fyhri, 2021). This difference could be due to the low respondent rates for users who had ever been in an accident of the survey of this thesis.

Among all 642 respondents, 48 (7,5%) had been in an accident involving an e-scooter, and 94% of these as pedestrians, while the others were car driver or bicyclist. The blame for the accident was most frequently indicated to be by the user of the e-scooter (94%).

Among all 642 respondents, 210 (33%) indicated that they had witnessed an accident involving an e-scooter. 93% of these blamed the user of the e-scooter for the accident.

4.1.7 Agreeing / Disagreeing to Statements

All respondents were asked to agree or disagree with various statements regarding e-scooters from a pedestrian point of view. By using a 5-point Likert scale, they could indicate how much they agreed or disagreed with the different statements.

"I feel safe when e-scooters drive nearby":

Of all 642 respondents, 12% agreed/strongly agreed to this statement, while 75% agreed/ strongly disagreed and 13% neither. This is the statement with the most percentage of neither. Most of those agreeing had used an e-scooter before (see figure 4.14).

When comparing male and female answers, the majority of those agreeing to the statement were males and of younger age. Men were also the ones responding to have been in most accidents while using an e-scooter (see chapter 4.1.6).

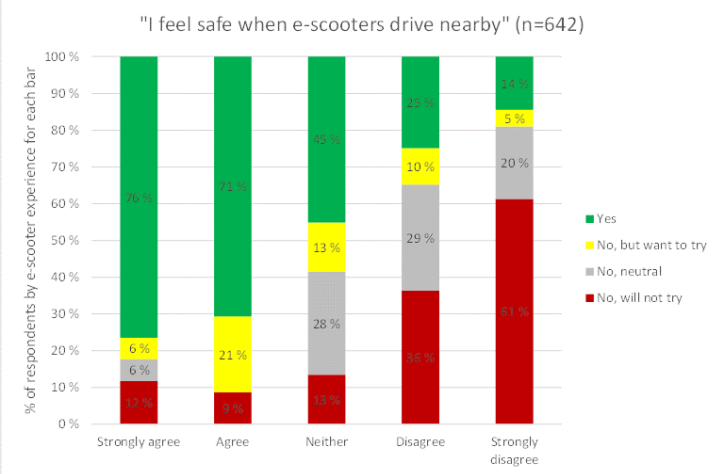


Figure 4.14: The diagram shows the relation between those having used an e-scooter or not and the feeling of safety from a pedestrian point of view.

Figures 4.14 and 4.15 thus indicate that those who are more likely to feel safe while e-scooters drive nearby are younger males having used an e-scooter themselves before.

The 80% of non-users who disagreed/ strongly disagreed with feeling safe when e-scooters drive nearby can be said to validate a former Danish study, which indicated that 76% of non-users on average felt insecure/very insecure in interaction with e-scooters (Færdselsstyrelsen, 2020).

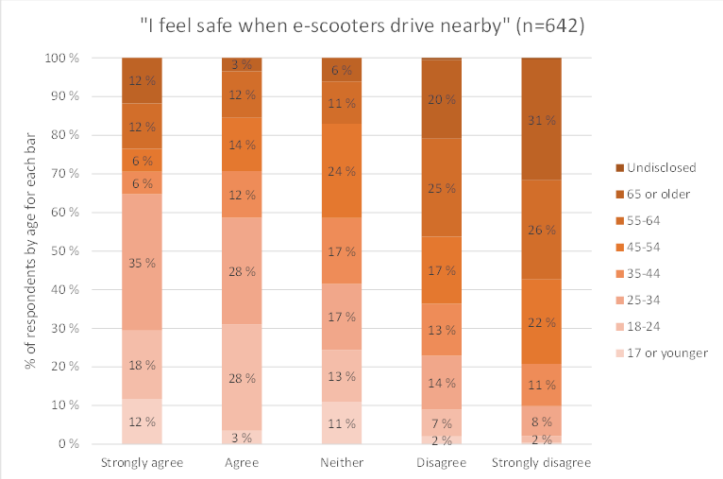


Figure 4.15: The diagram shows how the feeling of safety differs between age-groups.

"My accessibility is often disrupted by e-scooters":

Of all 642 respondents, 79% agreed/strongly agree to this statement, while 13% disagreed/ strongly disagreed and 8% neither.

Figure 4.16 shows a trend related to respondents with and without e-scooter experience, as 83% of those who strongly agreed to the statement have never used an e-scooter. Among those who strongly disagreed, 36% had never used an e-scooter.

Figure 4.17 shows how most of those who agreed to the statement were in the oldest age groups. This, together with figure 4.16, indicates that e-scooters are more likely to make people of older ages feel that their accessibility is disrupted.

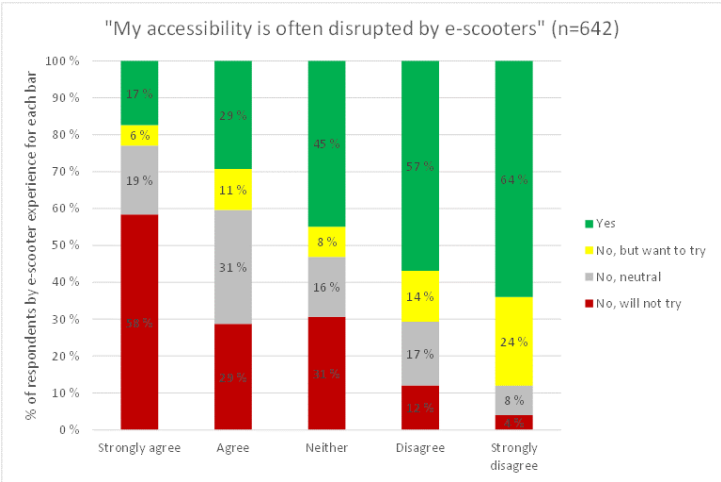


Figure 4.16: The diagram shows the relation between those having used an e-scooter or not and the feeling of e-scooters disrupting their accessibility as pedestrians.

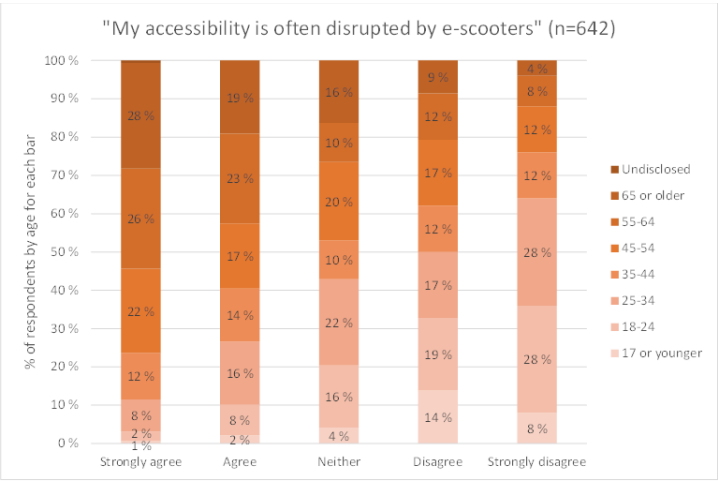


Figure 4.17: The diagram shows the feeling of disrupted accessibility between age groups.

"E-scooters visually spoils the cityscape":

Of all 642 respondents, 85% agreed/ strongly agreed to this statement, while 8% disagreed/strongly disagreed and 7% neither. This is the statement with the highest agreement among all respondents.

Figure 4.18 shows that most non-users of e-scooter agrees with the statement.

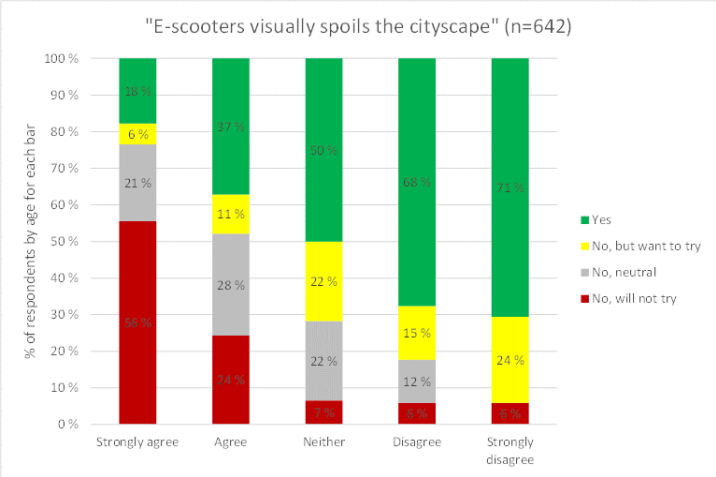


Figure 4.18: The diagram shows the relation between those having used an e-scooter or not and respondents' opinion on whether they feel that e-scooters visually spoils the cityscape.

Figure 4.19 shows the age distribution among respondents. There was a higher amount of older people that agreed that e-scooters visually spoil the cityscape. Those of younger age disagreed more with this.

Together, figures 4.18 and 4.19 indicate that most of those without experience using e-scooter and older age groups feel the e- scooters visually spoil the cityscape.

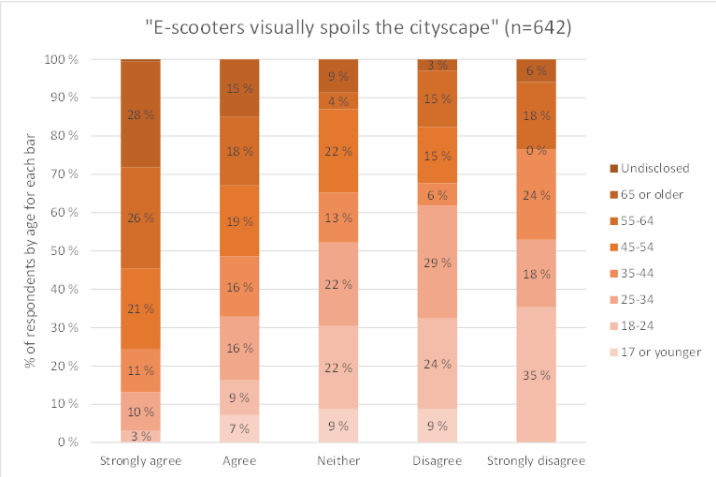


Figure 4.19: The diagram shows how respondents felt like e-scooters visually spoils the cityscape between age groups.

"It is problematic that e-scooters are allowed to drive on the pavement":

Of all 642 respondents, 77% agreed/ strongly agreed to this statement, while 13% disagreed/strongly disagreed and 9% neither.

Figure 4.20 shows that most non-users agreed to this statement, as they represented 86% of those who strongly agreed. 31% of non-users strongly disagreed.

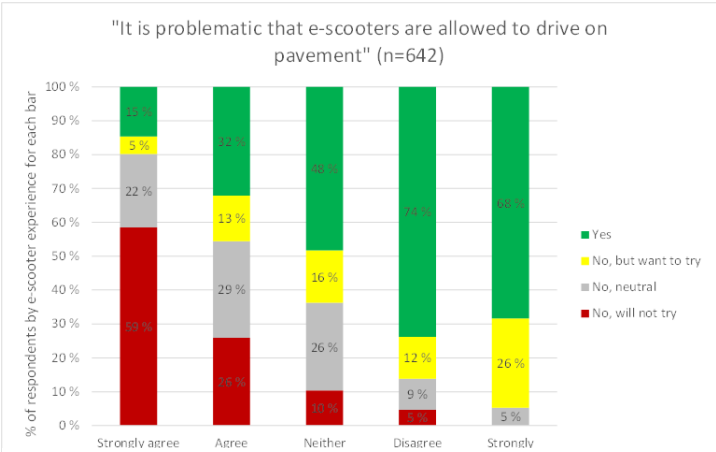


Figure 4.20: The diagram shows the relation between those having used an e-scooter or not and whether the respondents felt it is problematic for e-scooters to drive on pavement.

Figure 4.21 shows how mostly older age groups agreed to this statement, while younger age groups dominate those who strongly disagreed.

Figures 4.20 and 4.21 together indicates that those who do not find it problematic for e-scooters to drive on the pavement are users of e-scooter of younger age.

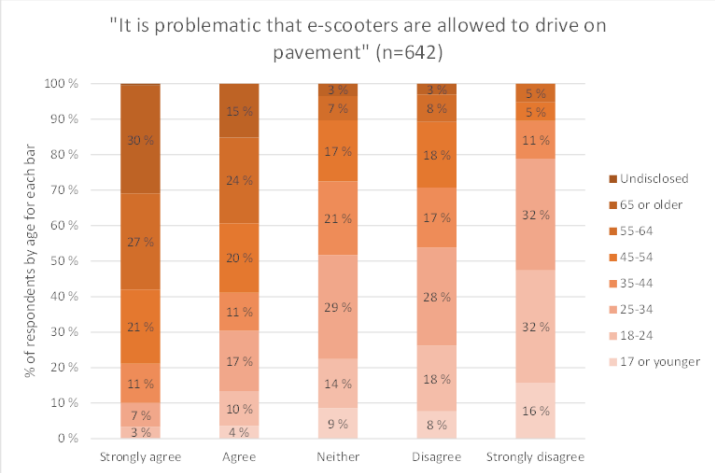


Figure 4.21: The diagram shows whether the respondents felt it is problematic for e-scooters to drive on pavement between age groups.

4.1.8 Measures for Improvement

All 642 respondents were at the end of the survey asked to choose up to three measurements that could improve the use of e-scooters. The result among the respondents shows that the most wanted measurements are stricter regulations, designated parking zones/racks, and reduced e-scooters. The number of respondents who wanted to forbid e-scooters was also significant (see figure 4.22).

Those who chose "other" were able to specify other measurements. This question seemed quite engaging among many respondents with strong opinions on e-scooters, as several of the responses were both long and relentless. One suggestion that was repeatedly was to forbid e-scooters from driving on pavement and pedestrian streets. Other proposals for regulations were; make it illegal to drive under the influence, age limit, mandatory use of helmet, reduced speed and forbid passengers (see chapter 1.6 for new Norwegian regulations efficient from May 18th 2021).

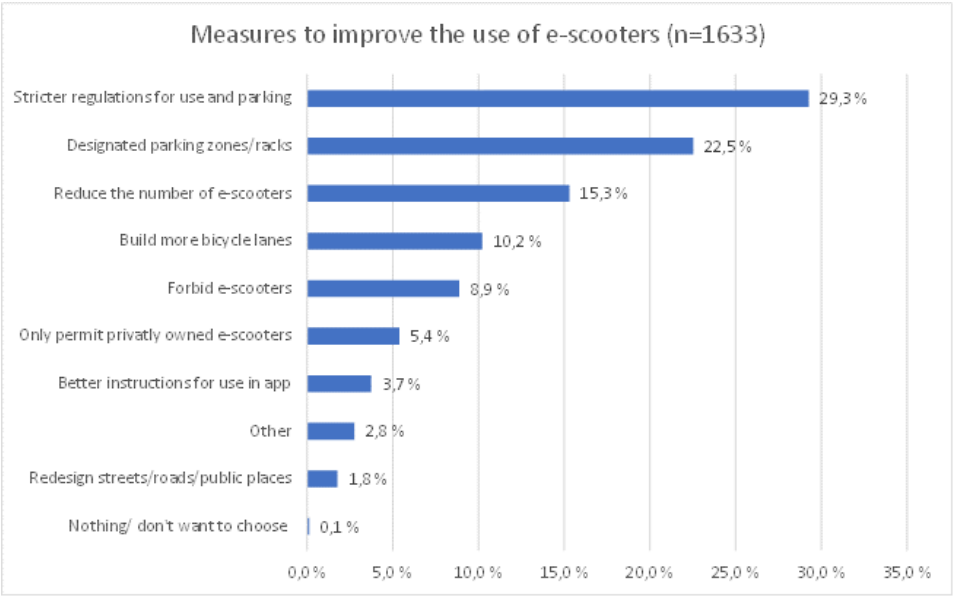


Figure 4.22: The diagram shows the result when respondents could choose up to 3 measurements for improvements.

4.2 Observations of E-scooters

In this section, the results from the analysis of the field observations are presented for each of the case cites.

4.2.1 Field Observations: Oslo

Out of 1331 parked e-scooter observed in Oslo, 47% were categorized as parked improperly; of these 4 % were not upright. In the case of Oslo, it thus seems that not upright scooters were not the biggest issue for improperly parked e-scooters during the days of observations.

Type of parking	Number of e-scooters
Proper	**707**
Improper	**624**
Upright	567
Not upright	57
Total (Oslo):	**1331**

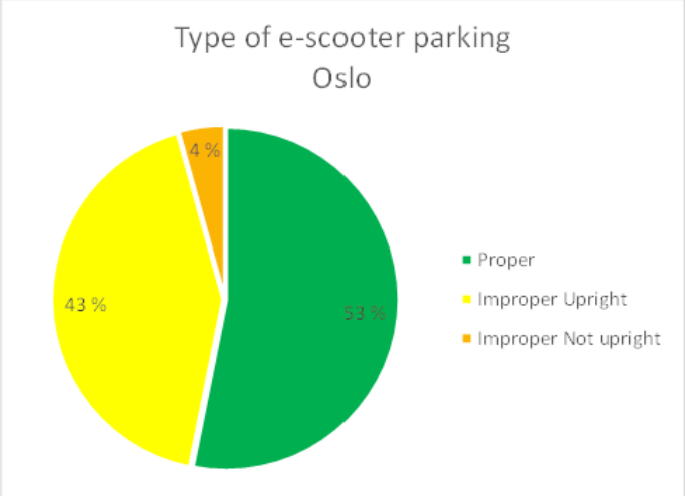


Figure 4.23: Distribution between proper and improper parking upright ad not upright (n=1331)

Improper parking

Figure 4.24 shows that the most frequent cases out of 624 improper parking in Oslo were e-scooters with the attribute *blocking pedestrians right-of-way,* with 516 e-scooters observed here. Most of these were related to the pavement attribute *pedestrian passageway*, where mostly the width of the pavement was smaller than the minimum of 2 meters of unblocked passageway. All attributes for improper parking were used, but some were relatively uncommon. However, the frequency does not neglect the severity or inconvenience of improper parking, such as reducing access for firefighters. Even though only two e-scooters were observed "in zone reserved for firefighters", there are two e-scooters more than wanted. E-scooters observed *by* bike parking or in furniture zone could still be improper by, e.g. blocking others right of way if part of the e-scooter was pointing out in pedestrian passageway. Though this might not represent a considerable risk to most pedestrians, people with disabilities could still be in danger of crashing into or stumble over the e-scooter.

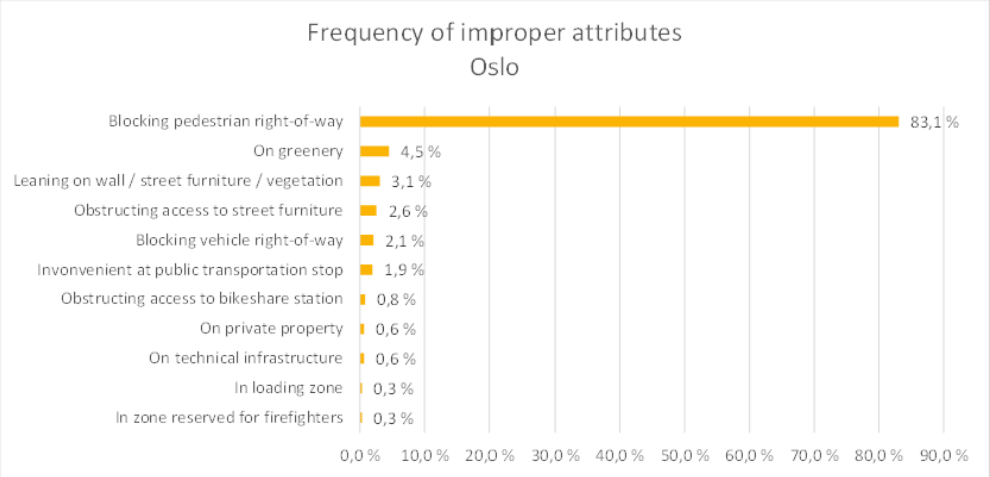


Figure 4.24: The diagram shows which attribute for improper parking that was used the most (n=624).

Proper Parking

Of the total of 1331 observed e-scooters in Oslo, 707 were labelled proper. This represented slightly more than half (53%) of all observations. The distribution between the attributes for proper parking was: 395 e-scooters (56%%) *"not blocking pedestrian right-of-way"*, followed by 208 (29%) *"in street furniture zone"* and 104 (15%) in *"suitable parking zone"* and *12 (24%).*

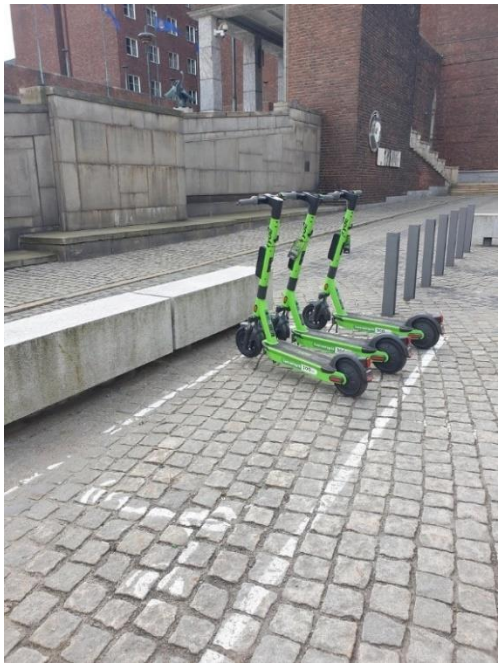


Figure 4.25: Example of proper parking in designated parking zone for e-scooters at a plaza next to the city hall of Oslo.

Pavement attributes

1315 of e-scooter parking was observed done on pavement. Figure 4.25 shows that most of these (46%) happened in a pedestrian passageway, followed by street furniture (20%) and technical infrastructure (9%). The latter was an interesting attribute that often, during the observations in Oslo, surprisingly seemed to attract e-scooters. Technical infrastructure could be electrical cabinets by the pavement, light poles, parking meters etc. Technical infrastructure had during the observations more e-scooters parked by than bike parking and designated e-scooter parking had combined.

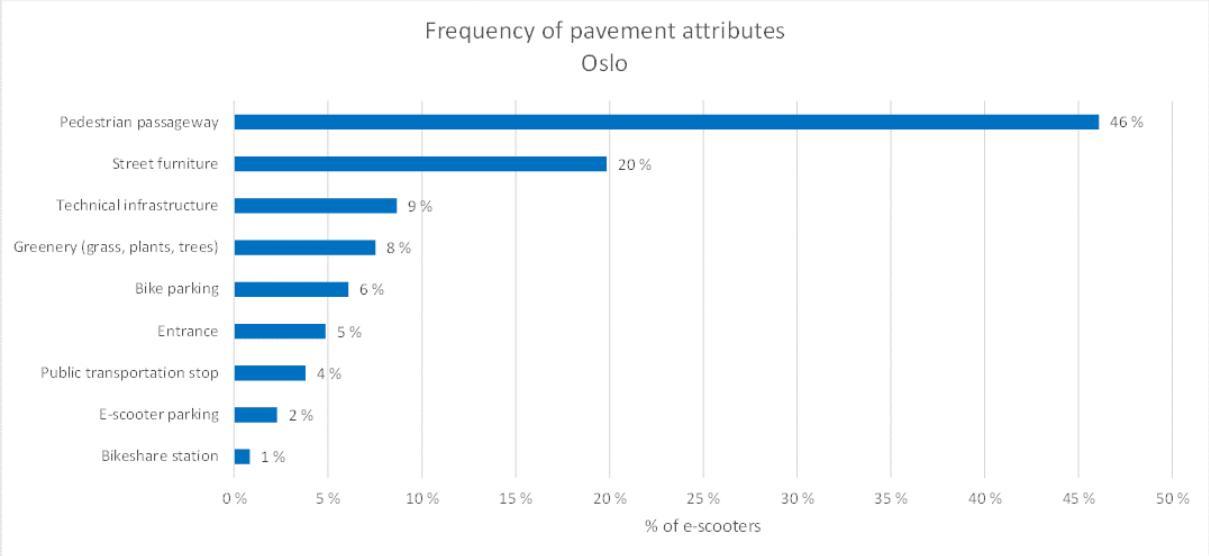


Figure 4.26: The diagram illustrates the number of e-scooters observed by each pavement attribute (n=1315)

Figure 4.27 shows the distribution between the number of improper or proper parking among e-scooters observed by pavement attributes. It gives an indication of where most improper or proper parking with e-scooter is likely to happen. Most of the parking observed by bike and e-scooter parking and street furniture was proper. Technical infrastructure also had quite a few improper parking compared to most other attributes. E-scooters were most likely to be improperly parked in the pedestrian passageway by blocking pedestrian right-of-way, or in bikeshare stations by blocking access to the use of this.

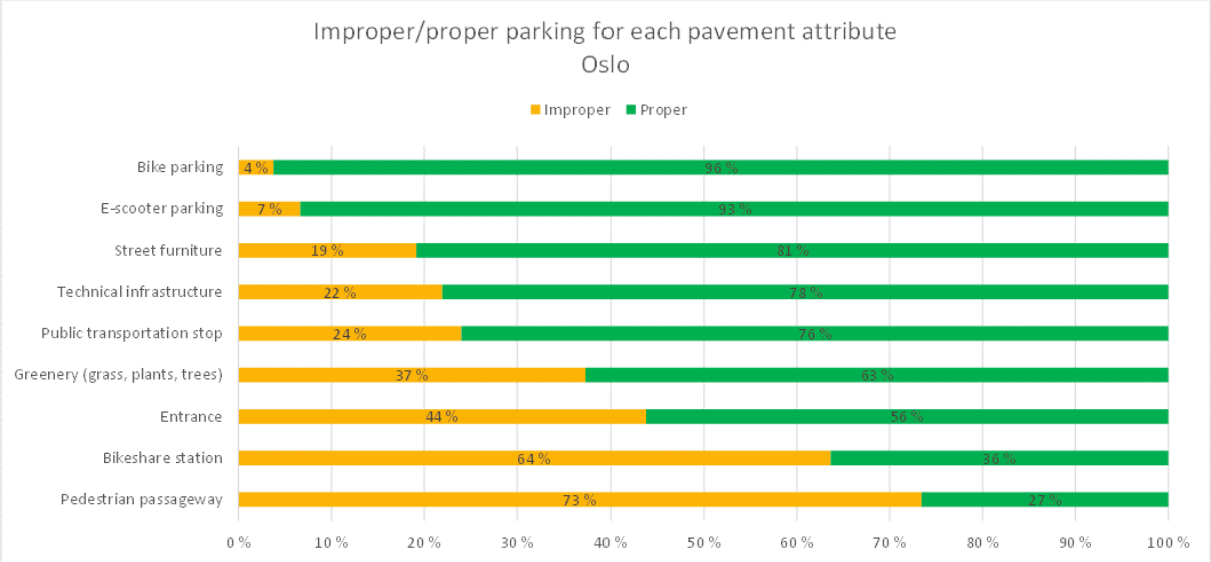


Figure 4.27: Diagram illustrating the distribution between improper/proper parking for each pavement attribute (n=1315).

Figure 4.28 shows the type of parking by pavement attributes and the percentage of the total amount of improper and proper parking. The one with the most proper parking was by street furniture, followed by pedestrian passageway. This is also the attribute with most of the improper parking, as 445 (73%) out of all improper parking were observed here.

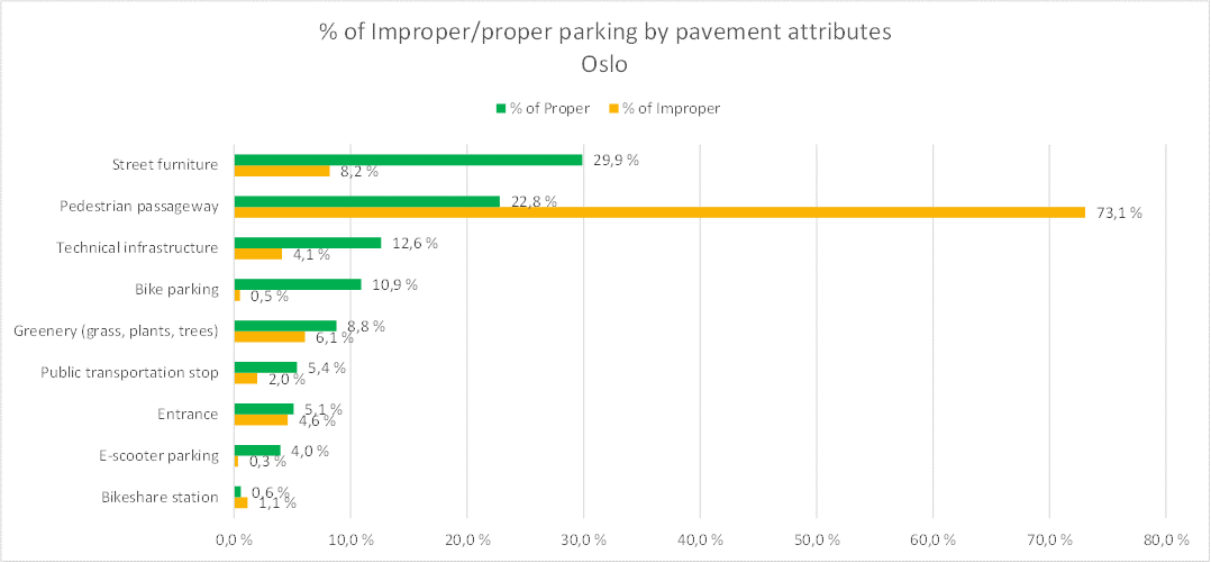


Figure 4.28: The diagram shows the percentage of the total amount of improper and proper parking separately across pavement attributes (n=1315).

Street-side attributes

Only 16 e-scooters got street-side attributes. Of these, 15 in parking lane and 1 in travel lane. All of the e-scooters observed with street-side attributes in Oslo were improper, except for one.

Non-street-side attributes

The distribution by the land use of non-street-side attributes of all 1331 observed parked e-scooters was: parks/plazas (40%), followed by retail (20%), residential (14%), restaurant/bar/café/leisure (12%), school (7%), offices (6%) and off-street parking (2%).

Figure 4.29 shows the balance between the number of improper/proper parked e-scooters observed in relation to non-street-side attributes. This indicates how e-scooter parking might be affected by the land use of the built environment immediately adjacent. Improper parking was more frequently observed in residential areas (74%). The place with the fewest observations of improper parking was by schools and parks/plazas.

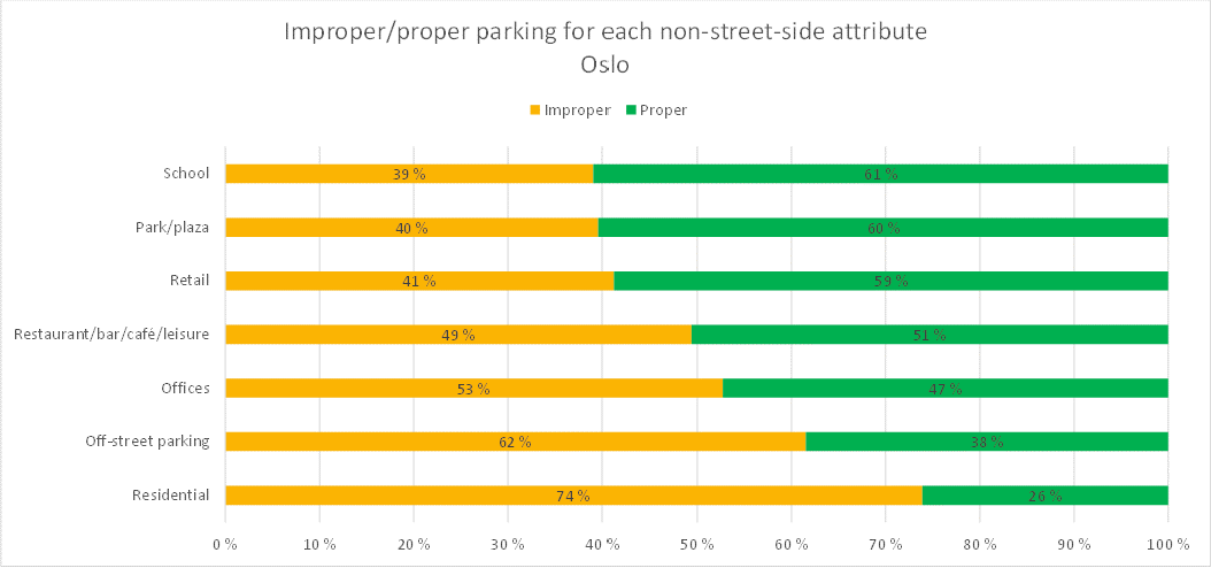


Figure 4.29: Diagram illustrating the distribution between improper/proper parking for non-street-side attribute (n=1331).

Figure 4.30: Examples of parking in residential areas in Oslo. Left: Three e-scooters improperly parked in parking lane for cars. Middle: E-scooter blocking pedestrian right-of-way to entrance of residence. Right: Two improper parked E-scooters next to sign saying "parking forbidden. Area reserved for firefighter-truck".

Figure 4.31 shows the type of parking by non-street-side attributes and the percentage of the total amount of improper and proper parking. Parks and plazas had the highest number of proper parking, but simultaneously also the highest amount of improper parking.

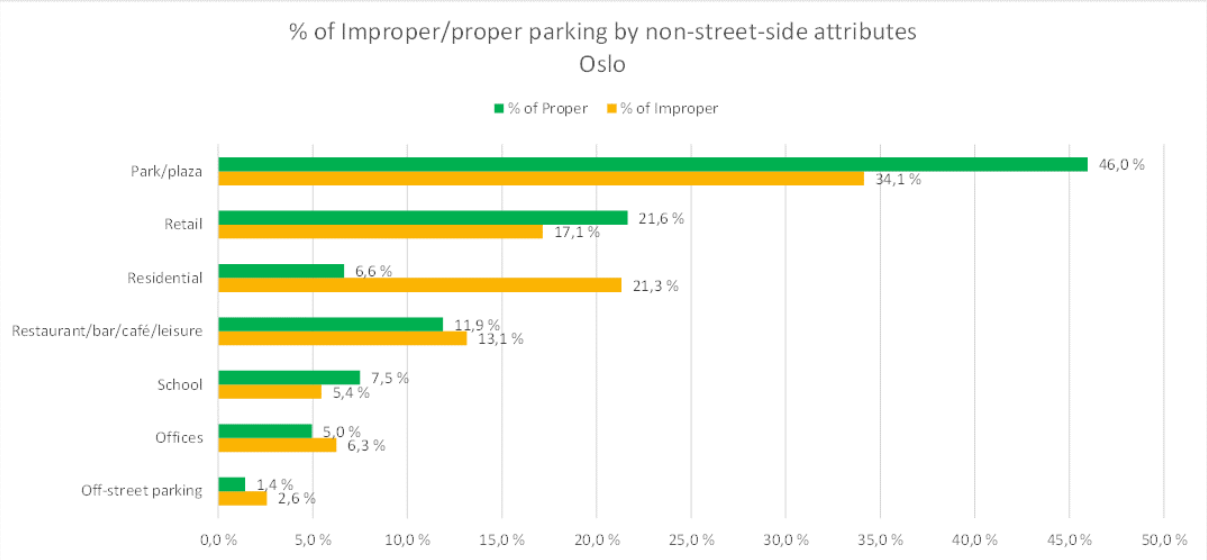


Figure 4.31: The diagram shows the percentage for improper and proper parking separately for each non-street-side attribute (n=1331).

Blocking pedestrian right-of-way counted for 83% of all improper parking observed in Oslo. Figure 4.32 shows where this way of improper parking was most frequently observed in relation to the different non-street-side attributes. E-scooters mostly blocked pedestrian right-of-way in land use for parks or plazas, followed by residential and retail. This corresponds to figure 4.31 and can be explained by being the attribute for the highest number of e-scooters was observed here.

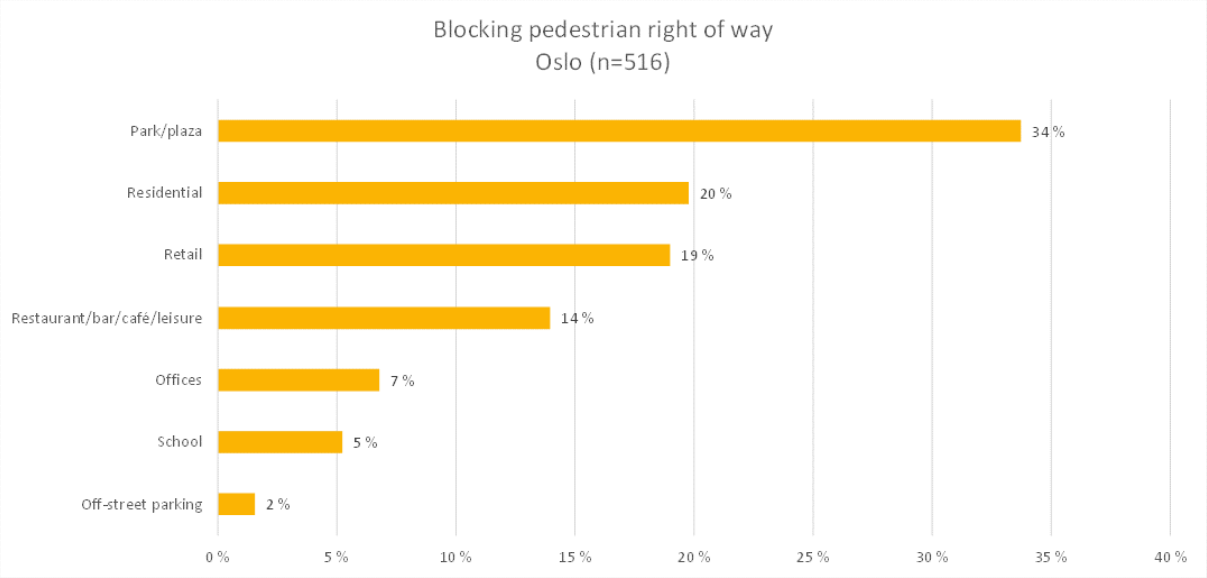


Figure 4.32: The diagram shows the distribution of the most frequent improper parking attribute among non-street-side attributes (n=516)

4.2.2 Field Observations: Fredrikstad

Out of 128 parked e-scooter observed in Fredrikstad, 60% were categorized as being parked improperly, of these, 12 % were not upright. In the case of Fredrikstad, not upright parking seemed to count for a more significant amount of improper parking compared to Oslo.

Type of parking	Number of e-scooters
Proper	**51**
Improper	**77**
Upright	61
Not upright	16
Total (Fredrikstad):	**128**

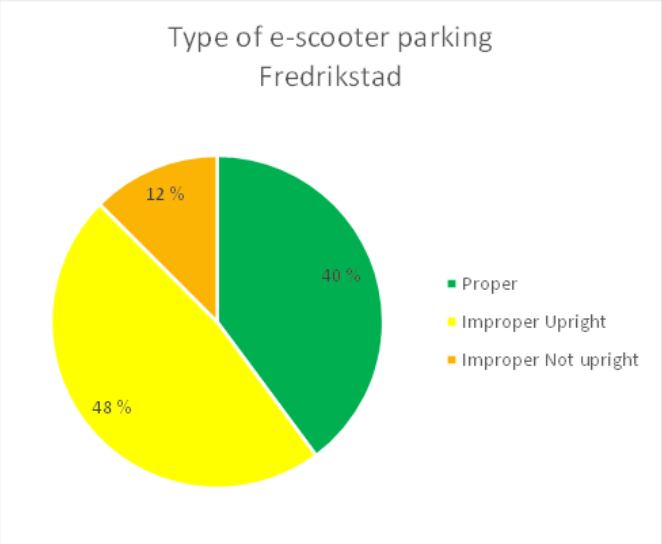


Figure 4.33: Distribution between proper and improper parking upright ad not upright (n=128)

Improper parking

Figure 4.34 shows that the most frequent cases out of a total of 77 improper parking in Fredrikstad were 42 e-scooters with the attribute *blocking pedestrians right-of-way*. This was followed by 16 e-scooters *blocking vehicle right-of-way*. Not all attributes for improper parking were used in Fredrikstad (7 out of 11).

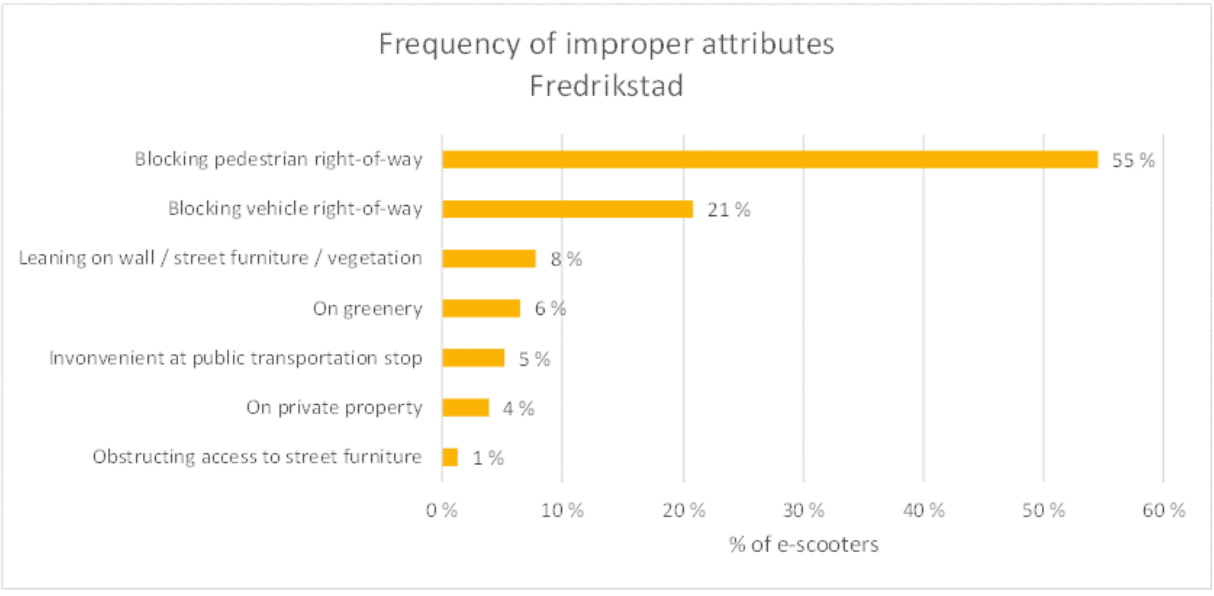


Figure 4.34: The diagram shows which attribute for improper parking that was used the most (n=77).

Proper parking

Of the total of 128 observed e-scooters in Fredrikstad, 51 were labelled proper. This represented slightly less than half (40%) of all observations. The distribution between the attributes for proper parking was: 23 e-scooters (45%) *"not blocking pedestrian right of way"*, followed by 16 (31%) in *"suitable parking zone"* and *12 (24%) "in street furniture zone"*.

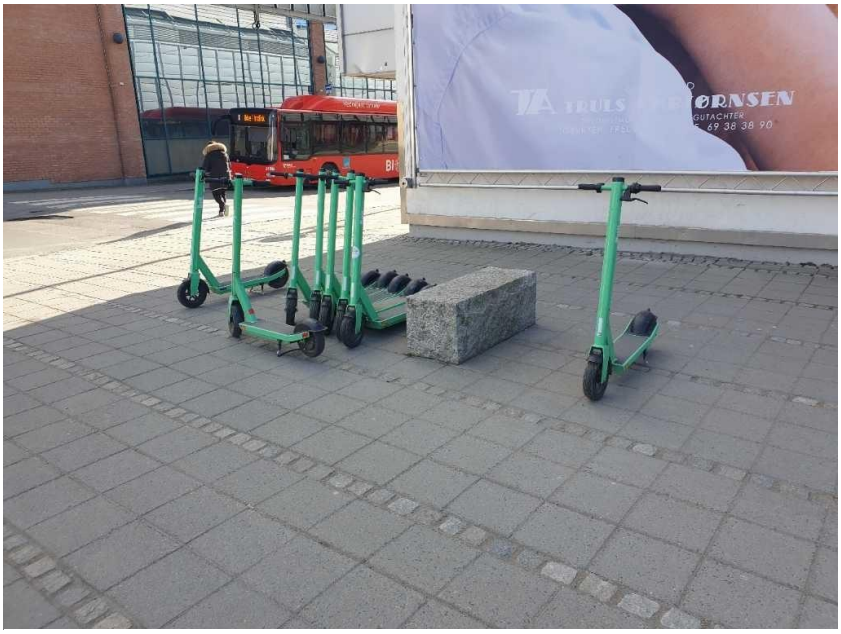


Figure 4.35: E-scooters properly parked next to street furniture, with at least 2 meters of free passageway on both sides, next to the entrance of Torvbyen shopping centre, Fredrikstad.

Pavement attributes:

114 e-scooter parking was observed done on pavement. Figure 4.36 shows that most of these (34%) happened in a pedestrian passageway, followed by public transportation stop (16%) and street furniture (13%).

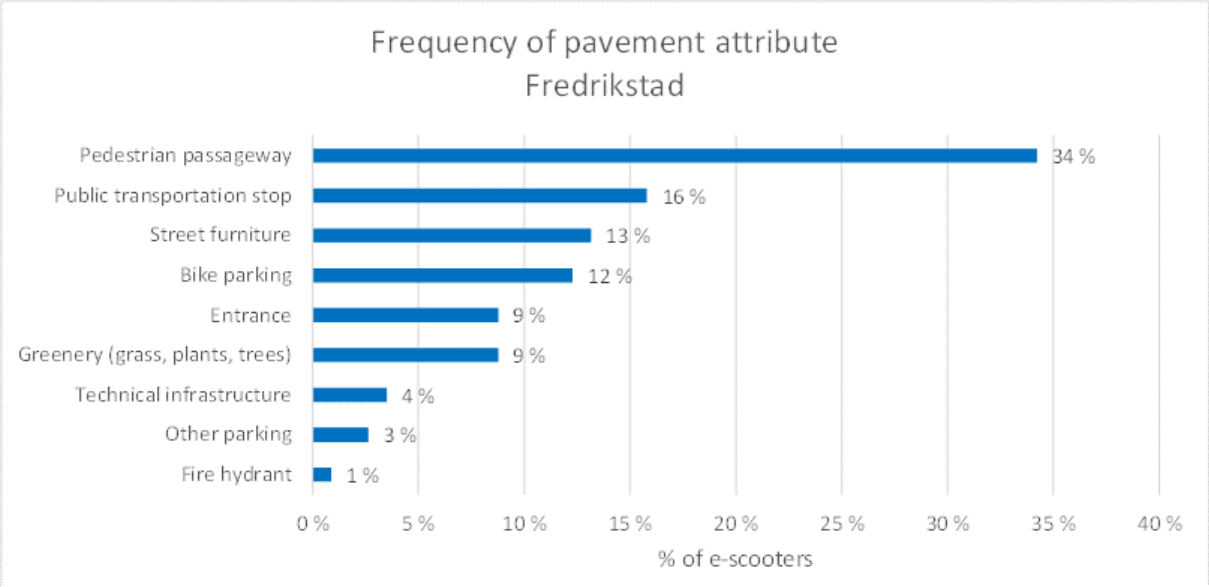


Figure 4.36: The diagram illustrates the number of e-scooters observed by each pavement attribute (n=114)

Figure 4.37 shows the distribution between the number of improper/proper parking among e-scooters observed by pavement attributes. It gives an indication of where most improper parking with e-scooter is likely to happen. Most parking observed by bike parking, and street furniture was proper. The attribute "other parking" was in the case of Fredrikstad relevant to 3 e-scooters parked in painted designated parking for MC, which was labelled proper. E-scooters were most likely to be improperly parked in a pedestrian passageway or by technical infrastructure, which differs from the Oslo results. One e-scooter was observed next to a fire hydrant, labelled improper since it was blocked pedestrian right-of-way on the pavement.

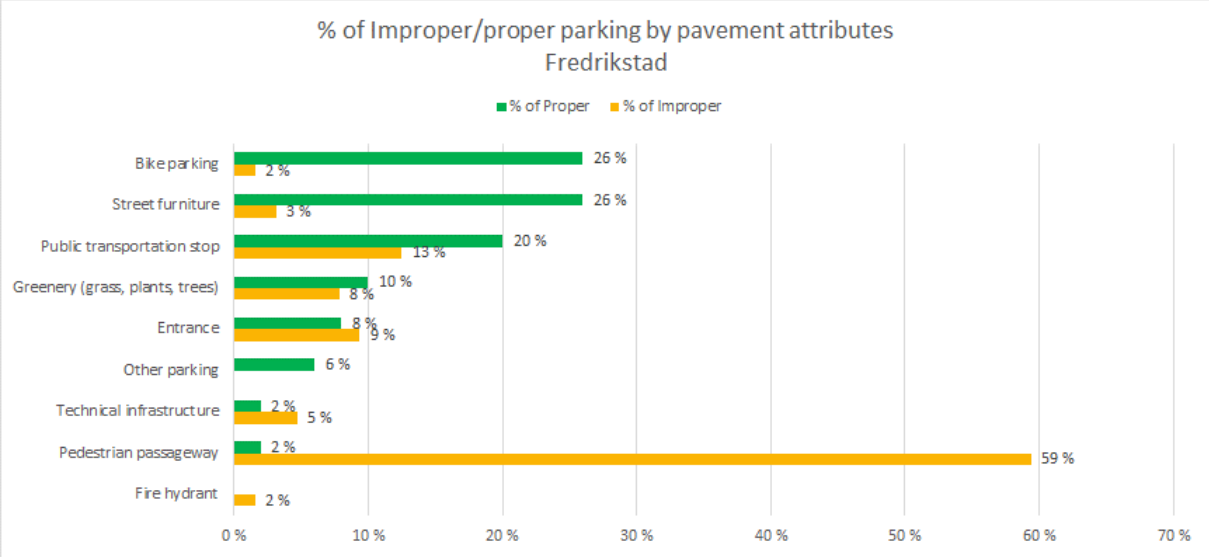


Figure 4.37: Diagram shows the percentage of the total amount of improper and proper parking separately across pavement attributes (n=114).

Figure 4.38 shows the type of parking by pavement attributes and the percentage of the total amount of improper or proper parking. The ones with the most proper parking were by bike parking and street furniture. The attributes with most of the improper parking were in a pedestrian passageway and by public transportation stop. However, the latter did also have a high amount of proper parking observed.

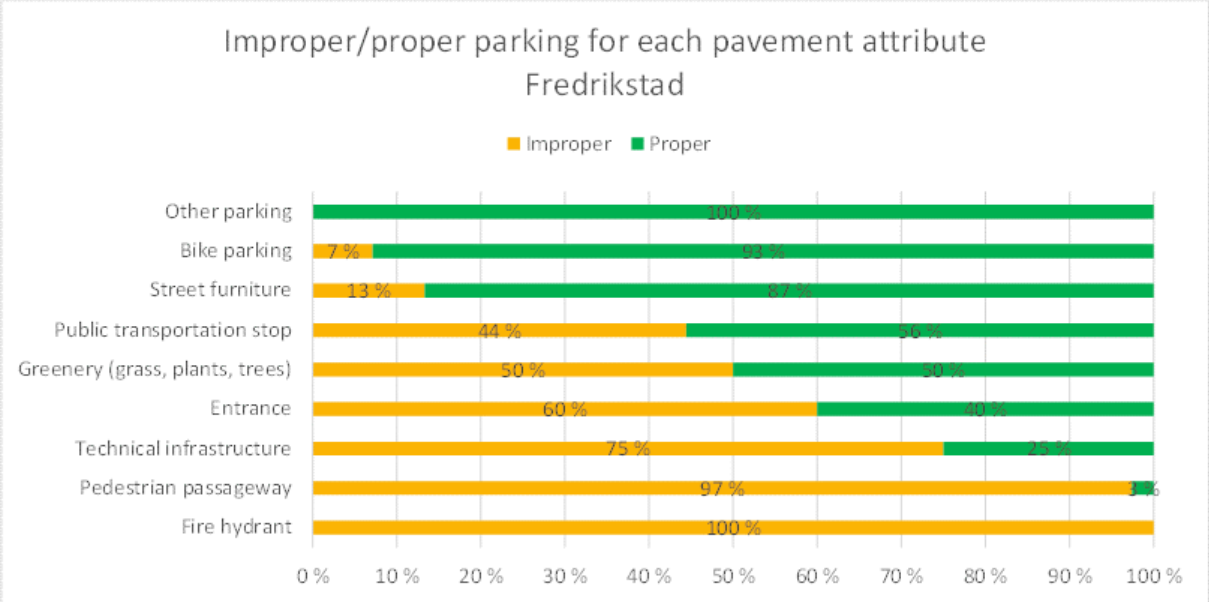


Figure 4.38: Diagram illustrating the distribution between improper/proper parking for each pavement attribute (n=114).

Street-side attributes:

23 e-scooters got street-side attributes in Fredrikstad, of these, 18 were in parking lane and 5 in travel lane. The majority of these were improperly parked. Figure 4.39 shows the distribution between the type of parking of e-scooters by street-side attributes.

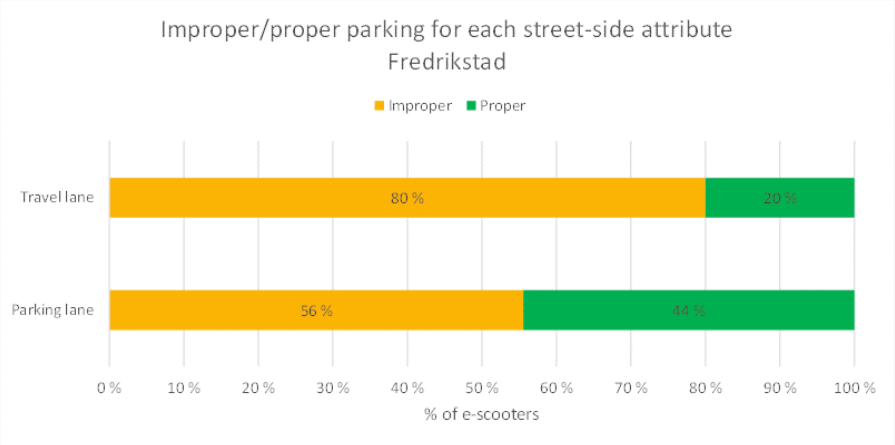


Figure 4.39 Diagram illustrating the distribution between improper/proper parking for each street-side attribute (n=23).

Non-street-side attributes:

The distribution by the land use of non-street-side attributes off all 128 observed parked e-scooters in Fredrikstad was: retail (37%), followed by residential (23%), off-street parking (19%), Restaurant/bar/café/leisure (8%), offices (8%), school (4%) and park/plaza (2%).

Figure 4.40 shows the balance between the number of improper/proper parked e-scooters observed in relation to non-street-side attributes. This indicates how e-scooter parking might be affected by the land use of the built environment immediately adjacent. Improper parking was more frequently observed in residential areas (76%). The place with the fewest observations of improper parking was by retail and schools.

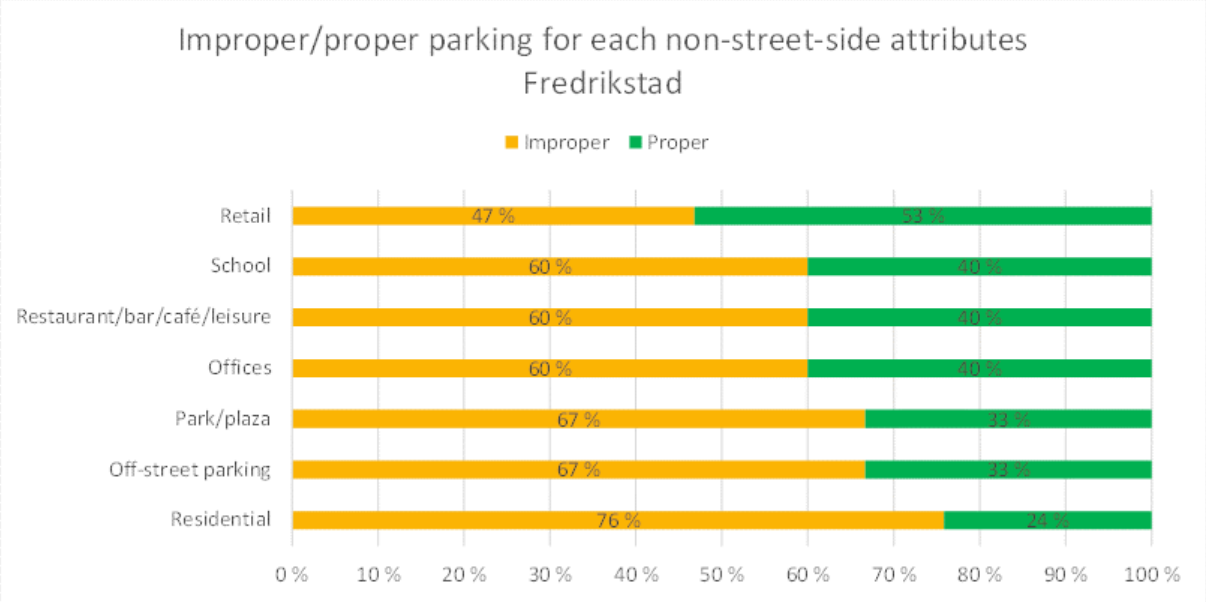


Figure 4.40: Diagram illustrating the distribution between improper/proper parking for non-street-side attribute (n=128).

Figure 4.41 shows the type of parking by non-street-side attributes and the percentage of the total amount of improper and proper parking. Retail and off-street parking had the highest amount of proper parking, but also the among the ones with the highest amount of improper parking.

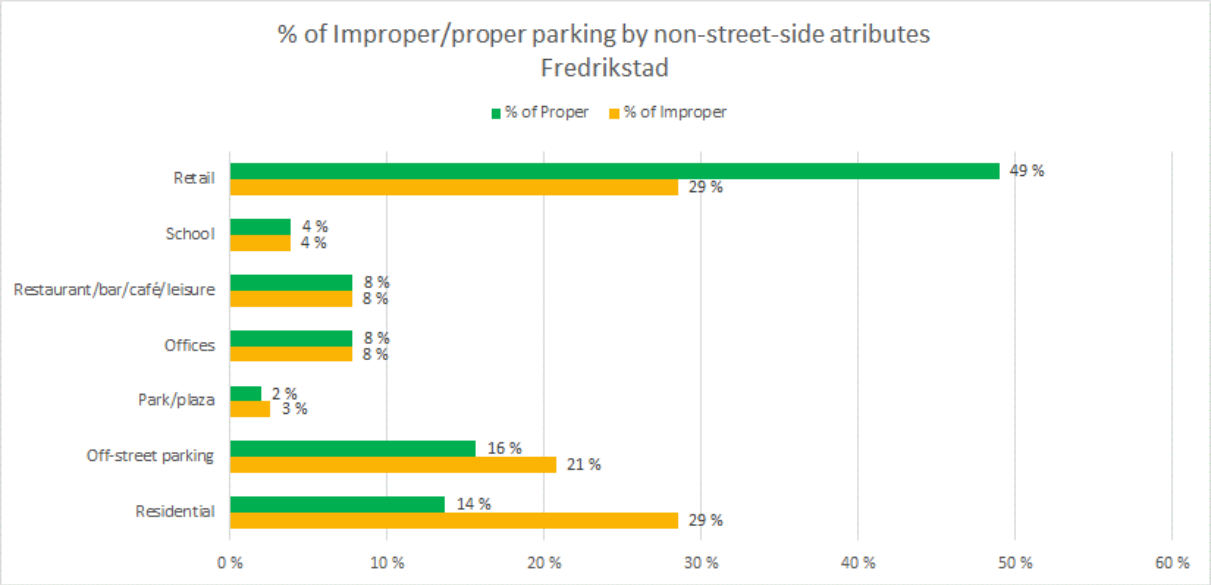


Figure 4.41: The diagram shows the percentage for improper and proper parking separately for each non-street-side attribute (n=128).

Blocking pedestrian right-of-way counted for 55% of all improper parking observed in Fredrikstad. Figure 4.42 shows where this way of improper parking was most frequently observed in relation to the different non-street-side attributes. E-scooters were mostly blocking pedestrian right-of-way by land use for retail, followed by residential and offices. This corresponds to figure 4.41 and can be explained by being places where most e-scooters were observed.

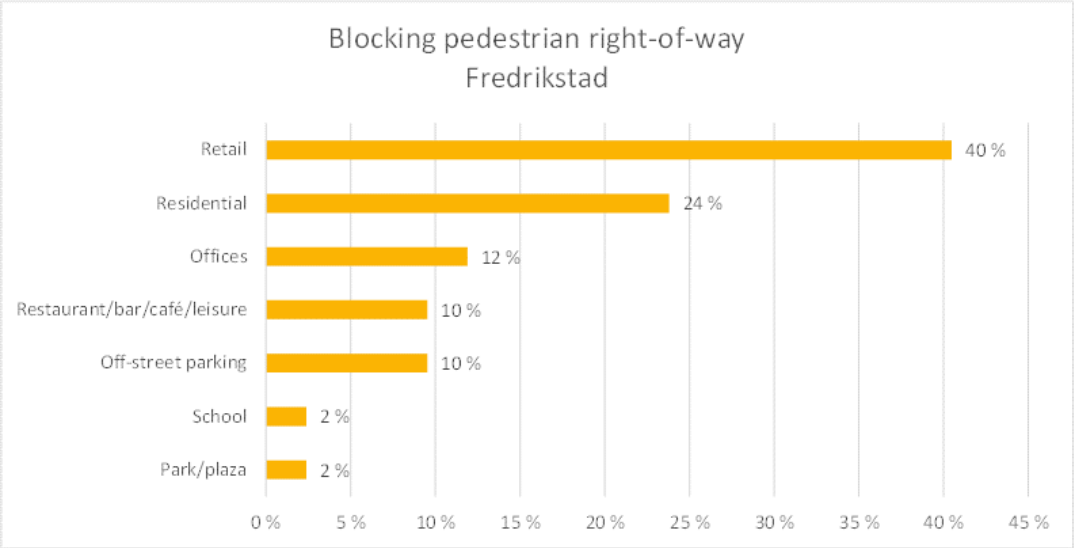


Figure 4.42: The diagram shows the distribution of the most frequent improper parking attribute among non-street-side attributes (n=42).

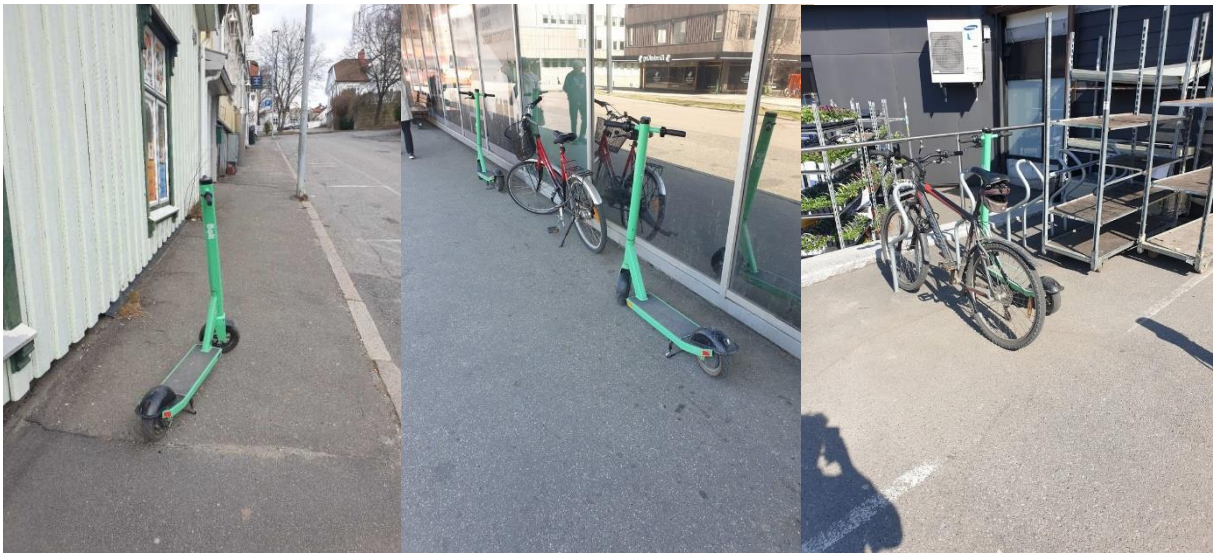


Figure 4.43: Examples of parking by retails in Fredrikstad. Left: one e-scooter improperly parked by completely blocking pedestrian right of way on pavement. Middle: Two e-scooters and one bicycle improperly parked on pavement with less than two-meter width. Right: Properly parked e-scooter and bicycle in bicycle racks.

4.3 Field Observations Summed Up

Overall, 39% of observations in Oslo and 33% of all in Fredrikstad was blocking the pedestrian right-of-way. Among improper parking attributes, this was also the most common reason in both cities. When comparing the percentage of all improper parking in relation to each non-street-side attribute (land use), figure 4.44 shows that residential, off-street parking and offices had the highest percentage and comparable in both cities.

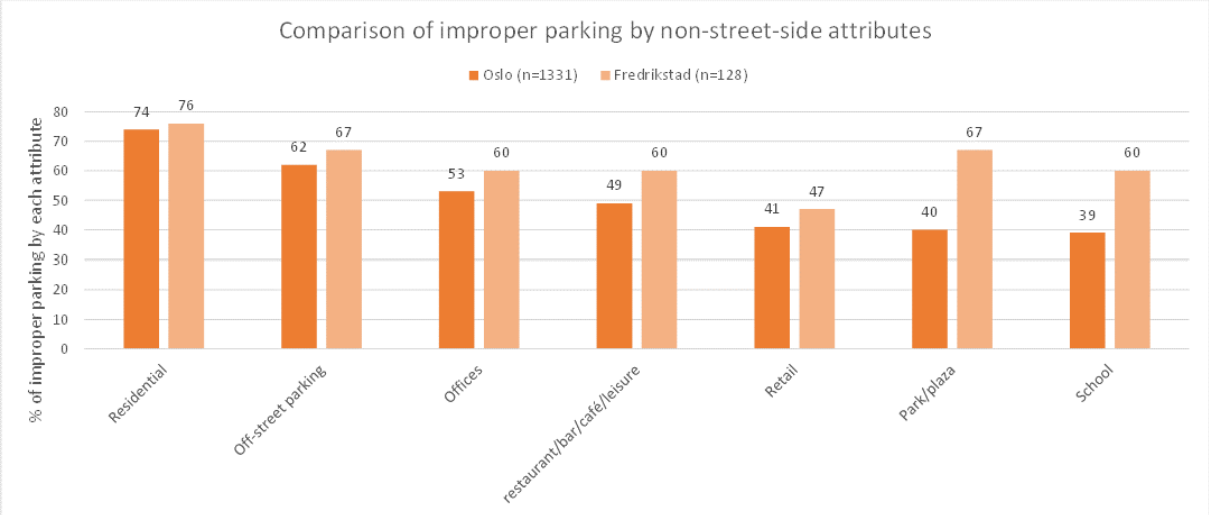


Figure 4.44: The diagrams show the percentage of all improper parking for each non-street-side attribute in both cities.

CHAPTER 5: A NEW FRAMEWORK

5.1 The Need for Change

For some, the phenomenon of e-scooter is simply challenging the familiar view on mobility and how public space is used. We might not yet understand how it works or ought to be implemented as part of the city. As it is challenging our tolerance for freedom of use in the public space. At the same time, we struggle to rethink how we want diverse user interactions to be part of a constantly developing urban environment and reality. How can we once again reclaim the public space? Will it have to be by the removal of e-scooters, or is it possible to work for an integration that promotes traffic safety and where social interactions are not being disturbed? In this chapter, the research goals will be discussed and reflected in relation to this thesis's empirical work to present a new framework for how e-scooters can be better planned for, based on urban planning theory and principles for planning a liveable city.

5.2 Perceptions on E-scooters

The survey has aimed to investigate goal 2 regarding people's perceptions on how e-scooters are used today. The results in chapter 4 indicated a clear difference between perceptions among both users/non-users and different age groups. Most non-users and those in older age groups seemed to have a more opposing attitude and negative experiences interacting with e-scooters in the public space. Former research also indicated that perceptions on e-scooters' impact on pedestrian access varied between those having tried e-scooter and not, as those with experience might have "*a more moderate view about their impact on sidewalk access and safety*" (Owain et al., 2019).

However, there were differences in opinions among both non-users, users and age groups. For instance, a significant number of users (85%) also agreed/strongly agreed that e-scooters visually spoil the cityscape. This illustrates how opinions across the different groups could vary, and that also young users of e-scooters might not be 100% satisfied with today's use.

Most non-users in the survey wanted stricter regulations, as indicated in former research (Karlsen & Fyhri, 2021). It also seemed like the respondents in the survey of this thesis had quite strong opinions regarding measurements for regulating e-scooter. About 9% indicated that they wanted to forbid e-scooters completely. Another recent survey conducted in Norway indicated that 26% of respondents wanted to forbid e-scooters completely, and 65% wanted to make helmets mandatory (Trygg Trafikk, 2021, quoted in NTB, 2021). Other former research has indicated that 90% wanted regulation for where e-scooters can park, including 80% of those younger than 30 (Oslo Kommune, 2020). This thesis indicated that 22,5% wanted more designated parking for e-scooters (see figure 4.22).

In conclusion, the online survey of this thesis has, in general, corresponded with expectations and former research, as the perceptions between users and non-users, young and senior citizens, also have reflected the picture of conflicts reported in news media the past year (Lian, 2021; NTB, 2020; NTB, 2021).

5.3 E-scooter Parking in the Public Space

The field observations aimed to investigate research goal 3; to understand the relationship between the built environment, how e-scooters are parked and what effect this might have on other users' right-of-way in the public space.

When looking at the results from the two case cities, there are both similarities and differences. Most significant is the percentage of the overall improper parking, which in Oslo was 47% and in Fredrikstad 60%. The latter also had three times more not-upright parking. There could be various reasons for this; for example, the users of e-scooters in Oslo might have more experience, while users in Fredrikstad are still new to the concept. It could also be that users are more aware of how they park due to the larger focus on e-scooters in local media in Oslo in the past year or simply coincidences at the time of observations. However, the overall problem could be less significant in Fredrikstad due to the much smaller number of e-scooters present in the cityscape (Holøien, 2020; Dalene, 2021), while Oslo has a way higher number (Jordheim & Yildirim, 2021).

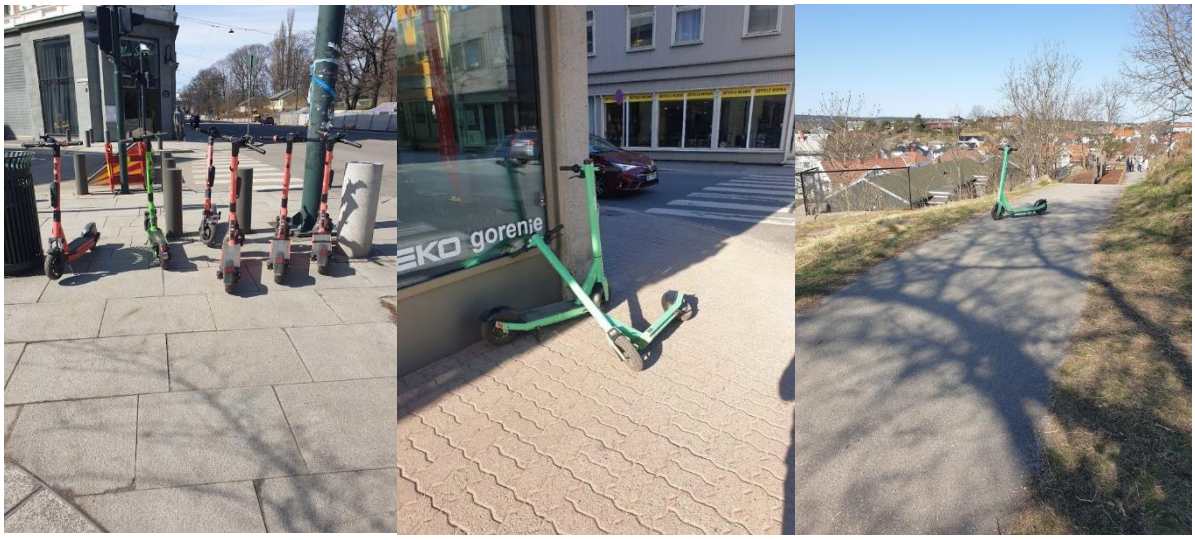


Figure 5.1: Left: cluster-parking of e-scooters blocking pedestrian passageway in Oslo; Middle: Blocking pedestrian passageway on street corner in Fredrikstad; Right: E-scooter blocking passageway on path in a park in Fredrikstad.

Overall similarities between the two case cities for proper parking was observed mainly with the attribute "not blocking pedestrian right-of-way". Most of the proper parking happened by/in street furniture zones, bike parking, public transportation stops and technical infrastructure. While more than half of e-scooter observations by land use for school and retail was proper.

Chapter 4 showed that most e-scooter observations were done in a pedestrian passageway (Oslo: 46%; Fredrikstad: 34%). This reflects the results from the online survey, where 48% of e-scooter users indicated that they parked on pavement on their last trip. Most of the improper parking was also observed on pavement and mainly was improper by blocking the pedestrian right-of-way in pedestrian passageways. Related to the built environment, most improper parking happened near residential and office land use and by off-street parking.

E-scooter parking by or in bicycle racks counted for 12% of observations in Fredrikstad and 6% in Oslo. At the same time, 11% of e-scooter users from the survey indicated that they parked by bicycle racks on their last trip. Oslo was the only case where designated parking for e-scooters was observed, whereas 2% of observations were done here. This could be occasional during the days of observations, as 11% of users indicated they parked in designated parking for e-scooters on their last trip.

In conclusion, the results from the field observations and the online survey partly validates each other regarding overall issues indicated by respondents, and the ways of improper parking were observed. The built environment seemed to have some impact on where improper parking was most likely to happen, which was by residential land use. This could be due to fewer areas to park without blocking pedestrian right-of-way, or that a lot of e-scooter users tended to end their trip right next to entrances of residences.

5.4 Shaping the New Framework

Chapter 3 presented different urban planning theories relevant for how issues and measures for planning for a liveable city. In this section, the most relevant theories relating to the planning of e-scooters as part of the public space are discussed and reflected upon, based on the results of the empirical work. These discussions and reflections are meant to answer research goal 1; to establish a framework based on urban planning theories and principles relevant for how e-scooters can be better planned for as part of the liveable city.

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5.4.1 E-scooters' Belonging in Public Space

The discussion in the rise of the e-scooters in the past years has been whether they categorise as motorised vehicles on the same level as cars and mopeds or as bicycles. Being more difficult to control than a bicycle, with smaller wheels and the standing pad being closer to the ground, the e-scooter does represent a higher risk for causing accidents. Former research has indicated that 1 out of 4 e-scooter users are close to having an accident every time they drove (Fearnley et al., 2020). Being in the streets accompanied by cars and heavy traffic is thus not the safest area for e-scooters to circulate as the most vulnerable road users.

On the other hand, e-scooters represent a danger to other more vulnerable users when driven on pavement or pedestrian-dominated areas. Of the respondents in the survey of this thesis, with a majority of non-users of e-scooters, 79% indicated that their accessibility often was reduced by e-scooters, and overall 77% indicated that it is problematic that e-scooters can drive on pavement. The most significant was that 75% of all respondents did not feel safe when e-scooters drove by. The question continues to be: where do these electrical two-wheelers belong?

The simple answer to this might be in the bike lanes. However, not all cities today have a continuous network of bike lanes implemented in the infrastructure. Even if e-scooters only were to be used in bike lanes, this somehow removes a lot of the purpose with the liberal way of using e-scooters. It seems that today's urban infrastructure in most cities is not good

enough designed or adapted for the safe use of e-scooters. The empirical work in this thesis has indicated that most of the improper parking happened in pedestrian passageways on pavement, while designated parking was not commonly observed used.

5.4.2 Rethinking How we Share Urban Space

As we in fact are seeing the public space being reclaimed from cars, new modes of transportation like the e-scooters have emerged, once again threatening the comfort and safety of pedestrians in the liveable city. The thing about pedestrian-friendly and walkable spaces is that they are also e-scooter friendly in their accessibility and unrestrictiveness. However, e-scooters are experienced as a disturbance to the flow and dynamic in places meant for slow speed and movements. They behave like pedestrians regarding the places they are moving, but with two wheels, faster and in silence. Even when the built space is designed for pedestrians, it seems like these electrical 2-wheelers do not experience any clear physical barriers to where they ought to move. By doing so, e-scooters have been taken advantage of spatial rights and threatened the concept of user congruence.

E-scooter operators can be said to have used their congruence of public space to a considerable extent in some cities, occupying spaces others want to move freely through. As indicated both in the survey and field observations, users of e-scooters most frequently parked on the pavement. Most of the improper parking was observed blocking the pedestrian right-of-way on the pavement. At the same time, most non-users indicated that their accessibility was reduced due to this.

What makes it difficult for others to adapt to this new dynamic is the way e-scooters are temporary occupying space. When moved to new spaces, there are constantly changes and occupations in public spaces due to the liberal nature of using e-scooters. The intensity of the feeling of having space occupied is more intruding where people live and traditionally had a feeling of connection, responsibility, security, and ownership to the public space adjacent. This results in a perfect receipt for conflicts.

Measures for preventing these conflicts in public space could be through general intellectual and moral education that can make all users of public space having a common feeling of progressive responsibility for a shared place (Lynch, K., 1984). Other measures could be through physical barriers or a set of new universal regulations for user interactions in public shared space. It might also be a need for an overall change of how the built environment is designed.

How might measures for physical changes in the built environment impact how we share public space? A common way of sharing the road space today is the use of different lanes, for instance designated lanes for cars, public transport, bikes, and pavement. Perhaps, in the future urban context of new mobility, this could be further adopted and integrated into networks of car-free, green connectors. Let us say we have a main street in the centre of a city that has excluded cars, where the road has designated lines for multiple modes of public transportation, micromobility, and pathways. This could allow for more space for all users, especially pedestrians, while at the same time maintaining the traditionally designated lanes for the various modes of transportation. It could be combined with partially shared space

solutions to give room for a more dynamic interaction between users and to reduce barriers in the public space. There must be a pure balance of the segregation between the different users and the shared spaces so that traffic flow is fluent, but at the same time is not experienced as a barrier in the public space.

The question that arises from a concept like this, is if e-scooters would even work better in such new spatial environments? Does public places designed for shared space change e-scooters behaviour by making them more aware of their surroundings?

It seems that with the introduction of e-scooters, shared spaces might not be working as well as they intend to do. The fact that the e-scooters are moving fast and silent while being harder to notice while moving; presents a higher risk to traffic safety than other current modes of transportation. They also have smaller wheels and are noticeably harder to control than bicycles. This could also explain the high reports for injuries related to e-scooters in former research (Fearnley et al., 2020). The survey in this thesis indicated that 9.5% of all users had been in an accident at least once, while 33% of all respondents had witnessed an accident involving an e-scooter, whereas nearly all blamed the user of the e-scooter.

In addition to the risk of accidents, they disturb movement flow when parked wherever in the public space, being especially impractical in shared spaces and narrow pavements. Though the initial concept of shared space is to have as few guidelines as possible, some would argue that in the case of e-scooters, there might just as well be a necessity. However, as we get better used to e-scooters as part of the urban picture, and adaptations are made in the urban design, we might see a future where shared spaces and combined user interactions with e-scooters are better integrated. Lynch, K. (1984) reflected that tolerance is the key to unobstructed control that can support the art of coexisting in time and space. This could the exact need of measure necessary to make e-scooters part of the liveable city; better tolerance and respect among all users of public space.

5.4.3 Looking for a Solution

Owain et al. (2019) argued that as new modes of transportation are introduced, there will always be a need to adapt regulation. Cars for instance, have shaped how cities have been designed with off-street parking, zoning for parking taxes and law enforcement for parking. Cities where bikes have dominated the public space have also adopted stricter regulations and made designated parking zones and garages. (Owain et al., 2019).

While the issues with parking in the city in the past years mainly have focused on cars, much of the principles regarding the design and inclusion of car parking in cities' urban spaces could be adopted to integrate e-scooters. We can say that the rapid and recent emerge of e-scooters is yet to adapt and develop its own norms for parking. One of the contemporary needs in cities that distribute e-scooters today is spaces that can provide availability for designated areas to park e-scooters, while maintaining the liberty of their use. The empirical work in this thesis indicated that users appreciate the liberty to park. The location of designated parking should be convenient and in favour of both users of e-scooters and others in the public space, preventing conflicts and disruptive interference with people with disabilities and others dependency on holistic urban design.

The emerge of e-scooters should, in other words, be a motivation for cities and municipalities to rethink their parking policies and look at possibilities to take advantage of urban spaces. As of today, users of e-scooters have in general quite few guidelines for where they should park, other than some instructions in the operator's smartphone app. Thus, there is a need for more suitable places for designated e-scooter parking that can guide users to park in a preferable manner.

A common purpose of travel for e-scooters users is to travel to or from public transportation. In former research, the percentage of users riding to a public transportation stop has varied between 9 % to 15% (Berge, 2019; Fearnley et al., 2020; Færdselsstyrelsen, 2020). This thesis indicated that only 6,5% of users had this as a common purpose (see Chapter 4.1.5). However, e-scooters are the kind of mobility that could promote more neighbourhoods to be better connected to the public transportation network. Therefore, it can be useful to have parking for e-scooters close to or at public transportation stops. However, the e-scooters must not be parked in a way that is blocking others' right-of-way or reducing accessibility at the stop. E-scooters that were observed parked in such ways would be categorized as improper.

Some public transportation stops in Oslo had e-scooter racks placed next to them, promoting suitable parking. E-scooters were observed parked in some of the racks, but most frequently next to them (see figure 5.2). The e-scooter racks were owned by one of the major operators, which could be a reason why e-scooters from other operators were parked next to the racks, even though the rack was empty. This was also observed in recent research conducted in Norway (Karlsen et al., 2021).

Figure 5.2: Photo of e-scooters parked next to a designated parking rack by a bus stop at Knud Knudsens Plass in Oslo.

During the observations of this thesis, several e-scooters were parked in a way that did not impede nor obstruct others accessibility or right-of-way. In some cases, e-scooters were parked in places that simply did not serve as a passageway or had other functionality in the public space. For instance, spaces beneath stairs, smaller areas next to street furniture or other areas by pavement outside of the passageway (see figure 5.3). Such places could be referred to as *left-over-spaces* as they served little to no function in the space.

Reflecting upon these observations and the survey indications where most e-scooter users ended their ride parked on the pavement, such left-over-spaces could be better taken advantage of. This could be part of a solution or approach for implementing designated parking on narrow pavements and similar places with limited space. Further research for such solutions has also been suggested by former research (Karlsen et al., 2021).

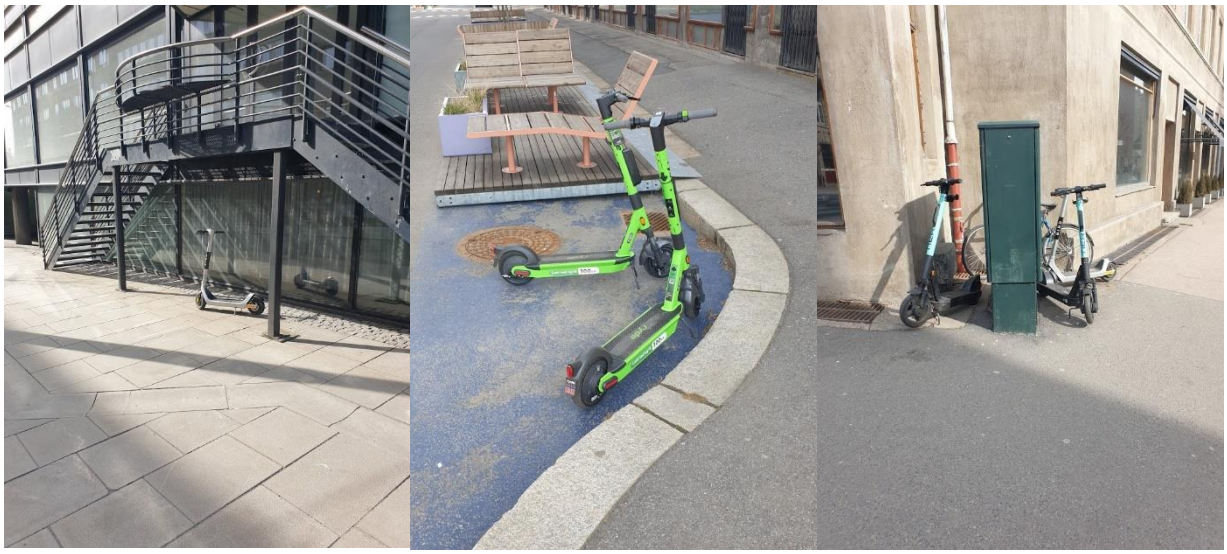

Figure 5.3: E-scooters parked in left-over-spaces by pavement without designated parking.

5.4.4 Rethinking Urban Mobility and Infrastructure

Could e-scooters be better integrated if the urban space had a better capacity for it? Just like the adoption that has been done for bicycles, could expanding this even further get an infrastructure that can handle the increased use of micromobility, such as the e-scooter? Respondents in the survey of this thesis indicated a wish for more designated parking and more bicycle lanes as measures for improving the use of e-scooters. By taking these measures into account when redesigning cities for the future, the space being 'intruded' today could be freed and given back to pedestrians, while also limiting the use of cars in city centres even more. To be prepared for the challenges cities of today are facing regarding the shift of mobility, there should be a focus on an urban design of infrastructure that allows for safely combined user interactions, promoting accessibility and sustainable mobility. As quoted earlier in this thesis:

> *Focusing on accessibility and, relatedly, places leads to an entirely different framework for planning and designing cities and their transportation infrastructure. It's been said that planning for the automobile city focuses on saving time. Planning for the accessible city focuses on time well spent"* (Cervero et al., 2017: 3).

When changing the way we transport ourselves in the city of tomorrow, we might as well change the way we look at streets and the traditional concept of roads. Instead of pure connectors as part of getting from point A to B, streets and roads could be 'long parks' that combines the concepts of mobility, social life, recreation and commerce. Just like the ciclovía in Bogota, Colombia, where the city's major streets were closed for cars every Sunday, allowing free movement for bicyclists and pedestrians (Mongomery, C., 2013). The same concept emerged in various cities such as Paris following the covid-19 pandemic, where there have been plans to keep the changes as part of the future renewal of the mobility network in the French capital (Medina et al., 2020; Sisson, P., 2020; O'Sullivan, 2020).

Such re-calibration or renewal of how we define and experience urban streets and public spaces could be precisely what cities need in order to respond to new emerging ways of future mobility. As a result, this could make greenery/parks and plazas what dominates the urban infrastructure, while roads are reduced to the minimum. Instead, a web of pedestrian paths and *'wheelways'* combined with dedicated bus lanes and railways could connect the city's different hubs.

In the introduction of this theses, I presented the idea that e-scooters are challenging the urban mobility paradigm shift on that the destination is what triggers the need for travel (Banister, 2008). E-scooters might in fact trigger the idea that the travel itself is the desired activity when the built environment is designed to facilitate this. As indicated in former research (Fearnley et al., 2020), and validated in this thesis, one of the common reasons e-scooters are used is because they are fun, fast, and easy to use. When public space and infrastructure allows for few interruptions and a feeling of safe and liberal mobility, the travel itself could trigger a sense of freedom. With the covid-19 pandemic in mind, this could be one factor for an increased desire for feeling free through mobility, which for the first time in today's generation has been taken away or strongly restricted during the years of 2020/2021.

Figure 5.4: E-scooters on pavement by the old shipyard in Fredrikstad.

CHAPTER 6: CONCLUSION

We live in a modern and rapidly developing world of constant change. Thus, it is difficult to predict what the city of the future looks like. The way we move around today could be different tomorrow as technology is evolving and further impacting our range of mobility options. E-scooter can be said to be the kind of innovative technology that rapidly has spread across the world, impacting cities public space and infrastructure and challenged existing regulations. It has in some way tested both governments and local municipalities' tools for governance and their reaction reflex on how to handle sudden changes as they emerge. Some countries have been better prepared to adapt their existing regulations, while others have hesitated in responding to noticeable changes that have physically impacted local public space and its' users.

In the future, sudden changes that present obvious requirements for adapting regulations should be treated efficiently. Local municipalities should always be given the legal tools to control and regulate their own public spaces. Therefore, it is crucial that governments allow access to these tools when requested by the municipalities.

The use of e-scooters is a popular and practical mode of transportation for short distance travels. The challenges with today's use are related to how public spaces are affected by parked e-scooters, which visually spoils the cityscape and mainly represent a threat to the pedestrian right-of-way on the pavement. E-scooters should be implemented in a way that benefits all users of public spaces while maintaining the benefits liberal micromobility represents.

There is a need for targeted regulations and physical measures in the built environment that can better integrate e-scooters as part of the city's infrastructure and public spaces, without limiting or reducing other users' right-of-way. The accessibility for pedestrians and people with disabilities should always be prioritised, while other modes of transportation should be adapted. These are some of the main measures towards integrating e-scooters as part of the public space in the liveable city, without obstructing other's accessibility and while maintaining the freedom of using e-scooters.

Future research should look further in-depth at how the use of e-scooters might affect public spaces and what this means for the field of urban planning and its' practitioners. The effect of new regulations as they are being implemented should also be measured by looking at how users of e-scooters respond to the new implementation, which could be compared between Norwegian cities and abroad. Like in the cases of the Norwegian cities of Stavanger and Fredrikstad, municipalities and operators alike should meet each other through constructive communication in order to develop local guidelines for the distribution and use of e-scooters. Essential aspects that should be considered is how pedestrians' right-of-way can be better protected and how designated parking solutions can be embedded in the built environment. There is also a need for further research on possible solutions for maintaining the liberal and practical benefits that represent the concept of e-scooters and future forms of micromobility.

Figure 6.1: An e-scooter parked in a hurry outside of a public toilet in Oslo.

CHAPTER 7: REFERENCES

7.1 References in Text

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7.2 Figures

Note: Every figure not cited in this chapter is made by the author of this thesis.

Figure 1.2: Regulation of parking by street corners in Los Angeles (LADOT, 2019). Available from: http://basic.cityofla.acsitefactory.com/sites/g/files/wph266/f/Final%20One-Year%20Dockless%20Permit.pdf

Figure 1.3: Some of the new signs for regulating e-scooter in Norway (Samferdselsdepartementet, 2021). Available from: https://lovdata.no/dokument/LTI/forskrift/2021-05-07-1453.

Figure 1.5: Change of e-scooter activity between 2019 and 2020 in Portland, USA (PBOT, 2020). Available from: https://www.portland.gov/transportation/escooterpdx/2019-e-scooter-report-and-next-steps

Figure 2.1: Oslo and Fredrikstad located in the Scandinavian context (Google Earth, 2021).

Figure 2.3: Map showing areas of postal codes to the respondents of the survey in Oslo (Bing/Microsoft Excel, 2021).

Figure 2.4: Map showing areas of postal codes to the respondents of the survey in Fredrikstad (Bing/Microsoft Excel, 2021).

Figure 2.8: Suggested layout for bicycle parking in furniture zone and necessary pavement width (Statens vegvesen, 2020). Available from: https://hdl.handle.net/11250/2688248.

Figure 3.1: Photo by Frøydis Hollakleiv (2021).

ATTACHMENTS

Undersøkelse om holdninger til mobilitet og el-sparkesykler under covid-19 pandemien

Velkommen til denne spørreundersøkelsen!

Spørreundersøkelsen blir gjennomført som del av arbeid med masteroppgave i by- og regionplanlegging ved NMBU. Spørsmålene handler om hvordan elektriske sparkesykler påvirker mobilitet og bruk av offentlige byrom.

Estimert tid for å svare er ca **4 - 9 minutter**.

Det er frivillig og anonymt å bli med på spørreundersøkelsen.

Page break

Page 2

Alder *

Select …

Kjønn *

Select …

Postnummer *

Hva beskriver best stedet der du bor?

Select …

Høyeste fullførte utdannelse *

Select …

Page break

Page 3

Nå kommer noen spørsmål knyttet til dine reisevaner

Ca. avstand mellom hjem og arbeidsplass/skole: *

Til vanlig, utenom pandemi og unntakstilstand med hjemmekontor / hjemmeskole

Select …

Har du hatt hjemmekontor/ hjemmeskole i løpet av de siste 3 månedene? *

Select …

Har du tilgang på bil? *

Inkludert om du vanligvis har mulighet til å låne bil fra venner/ familie.

Select …

Har du noen gang kjørt elektrisk sparkesykkel? *

Select …

Page break

Page 4

Hvordan har dine reisevaner med de ulike transportmidlene endret seg som følge av pandemien?

Siden april 2020

	Bruker mer	Uendret	Bruker mindre	Ikke brukt
Bil	○	○	○	○
Buss	○	○	○	○
Gange	○	○	○	○
Sykkel	○	○	○	○
Bysykkel	○	○	○	○
Elektrisk sykkel	○	○	○	○

Elektrisk sparkesykkel	○	○	○	○
Tog	○	○	○	○
T-bane	○	○	○	○
Trikk	○	○	○	○
Taxi	○	○	○	○
Ferge	○	○	○	○

Page break

Page 5

This element is only shown when the option "Ja" is selected in the question "Har du noen gang kjørt elektrisk sparkesykkel?"

Nå kommer noen spørsmål knyttet til din bruk av elektrisk sparkesykkel

Hvor ofte har du kjørt elektrisk sparkesykkel det siste året? *

This element is only shown when the option "Ja" is selected in the question "Har du noen gang kjørt elektrisk sparkesykkel?"

(Siden april 2020)

Select …

Eier du privat elektrisk sparkesykkel eller leier fra utleieselskap? *

This element is only shown when the option "3 - 4 dager i uka", "5 - 6 dager i uka", "Et par ganger i måneden", "1 - 2 dager i uka", "Bare én gang i løpet av det siste året", "1 - 2 ganger i halvåret" or "Hver dag" is selected in the question "Hvor ofte har du kjørt elektrisk sparkesykkel det siste året?"

Select …

Page break

Page 6

Hva har vært formålene med reisene det siste året ved bruk av elektrisk sparkesykkel? *

This element is only shown when the option "3 - 4 dager i uka", "5 - 6 dager i

uka", "Et par ganger i måneden", "1 - 2 dager i uka", "Bare én gang i løpet av det siste året", "1 - 2 ganger i halvåret" or "Hver dag" is selected in the question "Hvor ofte har du kjørt elektrisk sparkesykkel det siste året?"

Velg opptil de 3 hyppigste formålene

- [ ] Reise til jobb/skole
- [ ] Reise til / fra sentrum
- [ ] Reise til / fra holdeplass for kollektivtransport
- [ ] Reise i løpet av arbeidsdagen
- [ ] Reise for å møte venner / familie
- [ ] For moro skyld (Ikke et spesielt formål)
- [ ] Handle / shopping
- [ ] Reise til park / trening
- [ ] Reise til underholdning (f.eks. museum, kino, teater, bar)
- [ ] Annet

Hvis du krysset av for "annet" vennligst spesifiser:

This element is only shown when the option "Annet" is selected in the question "Hva har vært formålene med reisene det siste året ved bruk av elektrisk sparkesykkel?"

Page break

Page 7

Hvorfor velger du å kjøre elektrisk sparkesykkel? *

This element is only shown when the option "3 - 4 dager i uka", "5 - 6 dager i uka", "Et par ganger i måneden", "1 - 2 dager i uka", "Bare én gang i løpet av det siste året", "1 - 2 ganger i halvåret" or "Hver dag" is selected in the question "Hvor ofte har du kjørt elektrisk sparkesykkel det siste året?"

Kryss av for alle som er aktuelle for deg

- [ ] Gøy
- [ ] Raskt

- [ ] Enkelt å bruke
- [ ] Mer effektivt enn andre alternativer
- [ ] Frihet til å parkere
- [ ] Unngå trafikk / kø
- [ ] Miljøvennlig
- [ ] Mindre smitterisiko
- [ ] Helse
- [ ] Spare penger på transport
- [ ] Andre grunner

Andre grunner til at du kjører elektrisk sparkesykkel:

This element is only shown when the option "Andre grunner" is selected in the question "Hvorfor velger du å kjøre elektrisk sparkesykkel?"

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This element is only shown when the option "3 - 4 dager i uka", "5 - 6 dager i uka", "Et par ganger i måneden", "1 - 2 dager i uka", "Bare én gang i løpet av det siste året", "1 - 2 ganger i halvåret" or "Hver dag" is selected in the question "Hvor ofte har du kjørt elektrisk sparkesykkel det siste året?"

Tenk på den siste turen du hadde med elektrisk sparkesykkel:

Hvor kjørte du for det meste? *

This element is only shown when the option "3 - 4 dager i uka", "5 - 6 dager i uka", "Et par ganger i måneden", "1 - 2 dager i uka", "Bare én gang i løpet av det siste året", "1 - 2 ganger i halvåret" or "Hver dag" is selected in the question "Hvor ofte har du kjørt elektrisk sparkesykkel det siste året?"

Kryss av for maks 3, hvis relevant

- [ ] Veibanen (sammen med biltrafikk)
- [ ] Sykkelfelt
- [ ] Sykkel- og gangvei
- [ ] Fortau
- [ ] Gågate / torg

Hvor parkerte du sist gang? *

This element is only shown when the option "3 - 4 dager i uka", "5 - 6 dager i uka", "Et par ganger i måneden", "1 - 2 dager i uka", "Bare én gang i løpet av det siste året", "1 - 2 ganger i halvåret" or "Hver dag" is selected in the question "Hvor ofte har du kjørt elektrisk sparkesykkel det siste året?"

Select …

Spesifiser annet sted du parkerte

This element is only shown when the option "Annet" is selected in the question "Hvor parkerte du sist gang?"

Oppførte du deg som bilist, mopedist, syklist eller fotgjenger da du kjørte elektrisk sparkesykkel sist? *

This element is only shown when the option "3 - 4 dager i uka", "5 - 6 dager i uka", "Et par ganger i måneden", "1 - 2 dager i uka", "Bare én gang i løpet av det siste året", "1 - 2 ganger i halvåret" or "Hver dag" is selected in the question "Hvor ofte har du kjørt elektrisk sparkesykkel det siste året?"

Tenk på hvordan du forholdt deg til trafikkreglene og hvordan du følte andre trafikanter forholdt seg til deg. Velg det alternativet du følte deg mest som.

Det er også mulig å velge flere alternativer om du følte deg som en kombinasjon av flere.

- [ ] Bilist
- [ ] Mopedist
- [ ] Syklist
- [ ] Fotgjenger
- [ ] Annet

Spesifiser annet:

This element is only shown when the option "Annet" is selected in the question "Oppførte du deg som bilist, mopedist, syklist eller fotgjenger da du kjørte elektrisk sparkesykkel sist?"

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Har du noen gang vært i en ulykke mens du har kjørt el-sparkesykkel? *

This element is only shown when the option "Ja" is selected in the question "Har du noen gang kjørt elektrisk sparkesykkel?"

Select …

Hvem andre var involvert i den siste ulykken du hadde med el-sparkesykkel? *

This element is only shown when the option "Ja, 2 - 3 ganger", "Ja, én gang", "Ja, 6 - 7 ganger", "Ja, 4 - 5 ganger", "Ja, 10 eller flere ganger" or "Ja, 8 - 9

ganger" is selected in the question "Har du noen gang vært i en ulykke mens du har kjørt el-sparkesykkel?"

Bare ta stilling til den siste ulykken.

Flere valg mulig

- [ ] Ingen andre
- [ ] Fotgjenger
- [ ] Person i bil
- [ ] Person på moped
- [ ] Person på motorsykkel
- [ ] Person på sykkel
- [ ] Person på annen elektrisk sparkesykkel
- [ ] Andre

Spesifiser andre som var involvert i ulykken

This element is only shown when the option "Andre" is selected in the question "Hvem andre var involvert i den siste ulykken du hadde med el-sparkesykkel?"

Hva vil du si var hovedårsaken til ulykken? *

This element is only shown when the option "Ja, 2 - 3 ganger", "Ja, én gang", "Ja, 6 - 7 ganger", "Ja, 4 - 5 ganger", "Ja, 10 eller flere ganger" or "Ja, 8 - 9 ganger" is selected in the question "Har du noen gang vært i en ulykke mens du har kjørt el-sparkesykkel?"

Select …

Spesifiser annet

This element is only shown when the option "Annet" is selected in the question "Hva vil du si var hovedårsaken til ulykken?"

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Har du vært i en ulykke hvor elektrisk sparkesykkel har vært involvert? *

(Du var selv ikke fører av elektrisk sparkesykkel)

Select …

I ulykken var du... *

This element is only shown when the option "Ja" is selected in the question "Har du vært i en ulykke hvor elektrisk sparkesykkel har vært involvert?"

Select …

Spesifiser annet

This element is only shown when the option "Annet" is selected in the question "I ulykken var du..."

Hva vil du si var hovedårsaken til ulykken? *

This element is only shown when the option "Ja" is selected in the question "Har du vært i en ulykke hvor elektrisk sparkesykkel har vært involvert?"

Select …

Spesifiser annen årsak

This element is only shown when the option "Annet" is selected in the question "Hva vil du si var hovedårsaken til ulykken?"

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Har du noen gang vært vitne til en ulykke hvor elektrisk sparkesykkel har vært involvert? *

(Du var selv **ikke** involvert i ulykken)

Select …

De som var involvert i ulykken var... *

This element is only shown when the option "Ja" is selected in the question "Har du noen gang vært vitne til en ulykke hvor elektrisk sparkesykkel har vært involvert?"

Flere valg mulig

- [ ] Bruker av elektrisk sparkesykkel
- [ ] Fotgjenger
- [ ] Bilist
- [ ] Syklist
- [ ] Mopedist

- [ ] Motorsyklist
- [ ] Andre

Spesifiser andre

This element is only shown when the option "Andre" is selected in the question "De som var involvert i ulykken var..."

Hva vil du si var hovedårsaken til ulykken?

This element is only shown when the option "Ja" is selected in the question "Har du noen gang vært vitne til en ulykke hvor elektrisk sparkesykkel har vært involvert?"

Select …

Spesifiser annen årsak

This element is only shown when the option "Annet" is selected in the question "Hva vil du si var hovedårsaken til ulykken?"

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Nå kommer noen påstander knyttet til dine tanker og erfaringer som fotgjenger (eller bruker av rullestol)

Ta stilling til følgende påstander og velg om du er:
svært enig / enig / verken eller / uenig / svært uenig

Jeg føler meg trygg når elektriske sparkesykler kjører i nærheten. *

Select …

Jeg opplever ofte at fremkommeligheten min blir hindret av parkerte elektriske sparkesykler. *

Select …

Elektriske sparkesykler forsøpler bybildet visuelt. *

Select …

Det er et problem at elektriske sparkesykler kan kjøre på fortau og i gågater. *

Select …

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Hva mener du er de viktigste tiltakene som kan bedre bruken av elektriske sparkesykler i byen? *

Velg maks 3

- [ ] Bygge flere sykkelfelt / sykkelveier
- [ ] Lage faste parkeringsfelt / stativ
- [ ] Strengere reguleringer for bruk og parkering
- [ ] Endre utforming av gater / veier / offentlige plasser
- [ ] Forbedre instruksjoner for bruk i app

- [ ] Bare tillate private elektriske sparkesykler
- [ ] Redusere antall elektriske sparkesykler
- [ ] Forby elektriske sparkesykler
- [ ] Annet
- [ ] Ingenting / ønsker ikke svare

Spesifiser annet

This element is only shown when the option "Annet" is selected in the question "Hva mener du er de viktigste tiltakene som kan bedre bruken av elektriske sparkesykler i byen?"

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Tusen takk for at du tok deg tid til å svare på denne spørreundersøkelsen!

*Husk å trykk **SEND** for å levere svarene*

See recent changes in Nettskjema

Attachment 2: Oslo analysis of e-scooter observations

Observ.ID	Photo.ID	Date	e-scooter	Street-side attributes	Pavement attributes	Non-street-side attributes	Type of parking	Position	Proper	Improper
O1	01	16.04.2021	2		Greenery (grass, plants, trees)	Residential	Improper	Not upright		Leaning on wall / street furniture / vegetation
O1	02	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	03	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	04	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	05	16.04.2021	2		Greenery (grass, plants, trees)	Residential	Improper	Upright		In zone reserved for firefighters
O1	06	16.04.2021	2		Entrance	Residential	Proper	Upright	Not blocking other's right of way	
O1	07	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	08	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	09	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		
O1	10	16.04.2021	1		Street furniture	Retail	Proper	Upright	In street furniture zone	
O1	11	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	12	16.04.2021	2		Technical infrastructure	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	13	16.04.2021	1		Technical infrastructure	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	14	16.04.2021	1		Pedestrian passageway	Off-street parking	Improper	Upright		Blocking pedestrian right-of-way
O1	15	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	16	16.04.2021	1	Parking lane		Off-street parking	Proper	Upright	Not blocking other's right of way	
O1	17	16.04.2021	6	Parking lane		Off-street parking	Improper	Upright		Blocking vehicle right-of-way
O1	18	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	19	16.04.2021	2		Bike parking	Retail	Proper	Upright	In suitable parking zone	
O1	20	16.04.2021	5		Bike parking	Retail	Proper	Upright	In suitable parking zone	
O1	21	16.04.2021	1		Public transportation stop	Residential	Improper	Upright		Invonvenient at public transportation stop
O1	22	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	23	16.04.2021	1		Pedestrian passageway	Residential	Proper	Upright	Not blocking other's right of way	
O1	24	16.04.2021	1		Pedestrian passageway	Residential	Improper	Not upright		Blocking pedestrian right-of-way
O1	25	16.04.2021	2		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	26	16.04.2021	1		Street furniture	Residential	Proper	Upright	Not blocking other's right of way	
O1	27	16.04.2021	1		Street furniture	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	28	16.04.2021	1		Street furniture	Residential	Improper	Not upright		Blocking pedestrian right-of-way
O1	29	16.04.2021	2		Street furniture	Residential	Proper	Upright	Not blocking other's right of way	
O1	30	16.04.2021	1		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
O1	31	16.04.2021	1		Technical infrastructure	Residential	Proper	Upright	Not blocking other's right of way	
O1	32	16.04.2021	3		Street furniture	Residential	Proper	Upright	Not blocking other's right of way	
O1	33	16.04.2021	2		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	34	16.04.2021	2		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	35	16.04.2021	2		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	36	16.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Improper	Not upright		On greenery
O1	37	16.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Improper	Not upright		On greenery
O1	38	16.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Improper	Not upright		On greenery
O1	39	16.04.2021	1		Pedestrian passageway	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	40	16.04.2021	12		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	41	16.04.2021	3		E-scooter parking	Park/plaza	Proper	Upright	In suitable parking zone	
O1	42	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	43	16.04.2021	1		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	44	16.04.2021	3		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	In street furniture zone	
O1	45	16.04.2021	1		Technical infrastructure	Retail	Proper	Upright	Not blocking other's right of way	
O1	46	16.04.2021	5		Pedestrian passageway	Residential	Proper	Upright	Not blocking other's right of way	
O1	47	16.04.2021	1		Technical infrastructure	Residential	Improper	Upright		On technical infrastructure
O1	48	16.04.2021	1		Technical infrastructure	Residential	Improper	Upright		On technical infrastructure
O1	49	16.04.2021	2		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	50	16.04.2021	1		Bikeshare station	Retail	Improper	Not upright		Leaning on wall / street furniture / vegetation
O1	51	16.04.2021	1		Street furniture	Retail	Proper	Upright	In street furniture zone	
O1	52	16.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	53	16.04.2021	2		Technical infrastructure	Restaurant/bar/café/leisure	Improper	Upright		On technical infrastructure
O1	54	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	55	16.04.2021	1		Public transportation stop	Restaurant/bar/café/leisure	Improper	Not upright		Invonvenient at public transportation stop
O1	56	16.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	57	16.04.2021	5		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	58	16.04.2021	3		Technical infrastructure	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O1	59	16.04.2021	4		Bike parking	Retail	Proper	Upright	In suitable parking zone	
O1	60	16.04.2021	1		Entrance	Retail	Proper	Upright	Not blocking other's right of way	
O1	61	16.04.2021	1		Entrance	Residential	Proper	Upright	Not blocking other's right of way	
O1	62	16.04.2021	2		Pedestrian passageway	Retail	Proper	Upright	Not blocking other's right of way	
O1	63	16.04.2021	3		Street furniture	Retail	Proper	Upright	In street furniture zone	
O1	64	16.04.2021	2		Street furniture	Retail	Proper	Upright	In street furniture zone	
O1	65	16.04.2021	2		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	66	16.04.2021	2		Public transportation stop	Residential	Improper	Upright		Invonvenient at public transportation stop
O1	67	16.04.2021	1		Technical infrastructure	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	68	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	69	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	70	16.04.2021	3		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	71	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	72	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	73	16.04.2021	3		Street furniture	Residential	Improper	Upright		Obstructing access to street furniture
O1	74	16.04.2021	1		Entrance	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	75	16.04.2021	2		Bike parking	Residential	Proper	Upright	In suitable parking zone	
O1	76	16.04.2021	1		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
O1	77	16.04.2021	1		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
O1	78	16.04.2021	1		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
O1	79	16.04.2021	1		Street furniture	Offices	Proper	Upright	Not blocking other's right of way	
O1	80	16.04.2021	1		Bike parking	School	Proper	Upright	In suitable parking zone	
O1	81	16.04.2021	1		Pedestrian passageway	School	Improper	Upright		Blocking pedestrian right-of-way
O1	82	16.04.2021	1		Technical infrastructure	School	Proper	Upright	In street furniture zone	
O1	83	16.04.2021	1		Pedestrian passageway	School	Proper	Upright	Not blocking other's right of way	
O1	84	16.04.2021	1		Greenery (grass, plants, trees)	School	Proper	Upright	In street furniture zone	
O1	85	16.04.2021	1		Street furniture	School	Proper	Upright	In street furniture zone	
O1	86	16.04.2021	1		Street furniture	School	Proper	Upright	In street furniture zone	
O1	87	16.04.2021	1		Street furniture	School	Proper	Upright	In street furniture zone	
O1	88	16.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	89	16.04.2021	2		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	90	16.04.2021	6		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	91	16.04.2021	1		Street furniture	School	Improper	Upright		Blocking pedestrian right-of-way
O1	92	16.04.2021	4		Technical infrastructure	School	Proper	Upright	Not blocking other's right of way	
O1	93	16.04.2021	1		Bike parking	School	Proper	Upright	In suitable parking zone	
O1	94	16.04.2021	2		Bike parking	School	Improper	Upright		Blocking pedestrian right-of-way
O1	95	16.04.2021	2		Technical infrastructure	School	Proper	Upright	In street furniture zone	
O1	96	16.04.2021	2		Pedestrian passageway	School	Improper	Upright		Blocking pedestrian right-of-way
O1	97	16.04.2021	1		Pedestrian passageway	School	Improper	Upright		Blocking pedestrian right-of-way
O1	98	16.04.2021	1		Street furniture	School	Improper	Upright		Blocking pedestrian right-of-way
O1	99	16.04.2021	4		Street furniture	School	Improper	Upright		Obstructing access to street furniture
O1	100	16.04.2021	3		Pedestrian passageway	School	Improper	Upright		Blocking pedestrian right-of-way
O1	101	16.04.2021	3		Entrance	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	102	16.04.2021	3		Bikeshare station	Off-street parking	Proper	Upright	Not blocking other's right of way	
O1	103	16.04.2021	1		Street furniture	Off-street parking	Proper	Upright	Not blocking other's right of way	
O1	104	16.04.2021	3		Technical infrastructure	Off-street parking	Proper	Upright	Not blocking other's right of way	
O1	105	16.04.2021	1		Street furniture	Offices	Proper	Upright	Not blocking other's right of way	
O1	106	16.04.2021	1		E-scooter parking	Offices	Improper	Upright		Obstructing access to bikeshare station
O1	107	16.04.2021	1		E-scooter parking	Offices	Proper	Upright	In suitable parking zone	
O1	108	16.04.2021	1		Bike parking	Retail	Proper	Upright	In suitable parking zone	
O1	109	16.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	110	16.04.2021	1		Pedestrian passageway	Retail	Proper	Upright	Not blocking other's right of way	
O1	111	16.04.2021	1		Entrance	Retail	Proper	Upright	Not blocking other's right of way	
O1	112	16.04.2021	2		Entrance	Retail	Proper	Upright	Not blocking other's right of way	
O1	113	16.04.2021	4		Street furniture	Retail	Proper	Upright	In street furniture zone	
O1	114	16.04.2021	2		Street furniture	Retail	Proper	Upright	In street furniture zone	
O1	115	16.04.2021	1		Pedestrian passageway	School	Improper	Upright		Blocking pedestrian right-of-way
O1	116	16.04.2021	1		Street furniture	Retail	Proper	Upright	In street furniture zone	
O1	117	16.04.2021	1		Pedestrian passageway	Retail	Proper	Upright	Not blocking other's right of way	
O1	118	16.04.2021	1		Entrance	Residential	Proper	Upright	Not blocking other's right of way	
O1	119	16.04.2021	7		Pedestrian passageway	Off-street parking	Improper	Upright		Blocking pedestrian right-of-way
O1	120	16.04.2021	3		Greenery (grass, plants, trees)	Retail	Proper	Upright	In street furniture zone	
O1	121	16.04.2021	3		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	122	16.04.2021	1		Entrance	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	123	16.04.2021	1	Travel lane		Residential	Improper	Upright		Blocking vehicle right-of-way
O1	124	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	125	16.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	126	16.04.2021	1		Entrance	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	

O1	127	16.04.2021	4		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	128	16.04.2021	1		Technical infrastructure	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	129	16.04.2021	2		Technical infrastructure	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	130	16.04.2021	3		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	131	16.04.2021	3		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
O1	132	16.04.2021	4		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
O1	133	16.04.2021	1		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
O1	134	16.04.2021	2		Pedestrian passageway	School	Proper	Upright	Not blocking other's right of way	
O1	135	16.04.2021	1		Pedestrian passageway	School	Improper	Upright		Blocking pedestrian right-of-way
O1	136	16.04.2021	3		Street furniture	School	Proper	Upright	In street furniture zone	
O1	137	16.04.2021	4		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	138	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	139	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	140	16.04.2021	7		Public transportation stop	Park/plaza	Improper	Upright		Invonvenient at public transportation stop
O1	141	16.04.2021	2		Public transportation stop	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	142	16.04.2021	1		Public transportation stop	Park/plaza	Improper	Upright		Invonvenient at public transportation stop
O1	143	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	144	16.04.2021	1		Street furniture	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	145	16.04.2021	3		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	146	16.04.2021	4		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	147	16.04.2021	4		Pedestrian passageway	School	Improper	Upright		Blocking pedestrian right-of-way
O1	148	16.04.2021	3		Street furniture	School	Proper	Upright	In street furniture zone	
O1	149	16.04.2021	4		Pedestrian passageway	School	Improper	Upright		Blocking pedestrian right-of-way
O1	150	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	151	16.04.2021	13		Technical infrastructure	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	152	16.04.2021	1		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	153	16.04.2021	1		Street furniture	Park/plaza	Improper	Not upright		Blocking pedestrian right-of-way
O1	154	16.04.2021	9		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	155	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	156	16.04.2021	7		Street furniture	School	Proper	Upright	In street furniture zone	
O1	157	16.04.2021	2		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	158	16.04.2021	1		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	159	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	160	16.04.2021	1		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	161	16.04.2021	1		Pedestrian passageway	School	Improper	Upright		Blocking pedestrian right-of-way
O1	162	16.04.2021	1		Pedestrian passageway	School	Improper	Upright		Blocking pedestrian right-of-way
O1	163	16.04.2021	6		Street furniture	School	Proper	Upright	In street furniture zone	
O1	164	16.04.2021	1		Pedestrian passageway	School	Improper	Upright		Blocking pedestrian right-of-way
O1	165	16.04.2021	1		Street furniture	School	Proper	Upright	In street furniture zone	
O1	166	16.04.2021	4		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	167	16.04.2021	1		Bike parking	Restaurant/bar/café/leisure	Proper	Upright	In suitable parking zone	
O1	168	16.04.2021	1		Bike parking	Restaurant/bar/café/leisure	Proper	Upright	In suitable parking zone	
O1	169	16.04.2021	1		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	170	16.04.2021	1		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	171	16.04.2021	5		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	172	16.04.2021	5		Pedestrian passageway	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	173	16.04.2021	2		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	174	16.04.2021	2		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	175	16.04.2021	2		Street furniture	Retail	Proper	Upright	Not blocking other's right of way	
O1	176	16.04.2021	2		Bike parking	Retail	Proper	Upright	In suitable parking zone	
O1	177	16.04.2021	2		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	178	16.04.2021	1		Entrance	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	179	16.04.2021	1		Bike parking	Retail	Proper	Upright	In suitable parking zone	
O1	180	16.04.2021	1		Street furniture	Restaurant/bar/café/leisure	Improper	Upright		Obstructing access to street furniture
O1	181	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	182	16.04.2021	4		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	183	16.04.2021	2		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	184	16.04.2021	9		E-scooter parking	Park/plaza	Proper	Upright	In suitable parking zone	
O1	185	16.04.2021	1		Street furniture	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	186	16.04.2021	2		Street furniture	Restaurant/bar/café/leisure	Proper	Upright	In street furniture zone	
O1	187	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		In loading zone
O1	188	16.04.2021	1		Technical infrastructure	Retail	Improper	Upright		In loading zone
O1	189	16.04.2021	3		E-scooter parking	Restaurant/bar/café/leisure	Proper	Upright	In suitable parking zone	
O1	190	16.04.2021	2		Entrance	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	191	16.04.2021	1		Entrance	Retail	Proper	Upright	Not blocking other's right of way	
O1	192	16.04.2021	3		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	193	16.04.2021	3		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	194	16.04.2021	1		Street furniture	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	195	16.04.2021	1		Street furniture	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	196	16.04.2021	1		Street furniture	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O1	197	16.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O1	198	16.04.2021	1		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
O1	199	16.04.2021	3		Pedestrian passageway	Offices	Proper	Upright	Not blocking other's right of way	
O1	200	16.04.2021	2		Bike parking	Restaurant/bar/café/leisure	Proper	Upright	In suitable parking zone	
O1	201	16.04.2021	2		Street furniture	Retail	Proper	Upright	In street furniture zone	
O1	202	16.04.2021	1		Bike parking	Park/plaza	Proper	Upright	In suitable parking zone	
O1	203	16.04.2021	1		Bike parking	Park/plaza	Proper	Upright	In suitable parking zone	
O1	204	16.04.2021	8		Pedestrian passageway	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	205	16.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	206	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Not upright		Blocking pedestrian right-of-way
O1	207	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	208	16.04.2021	3		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	209	16.04.2021	1		Street furniture	Park/plaza	Improper	Not upright		Leaning on wall / street furniture / vegetation
O1	210	16.04.2021	1		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	211	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	212	16.04.2021	6		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	213	16.04.2021	1		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	214	16.04.2021	1		Technical infrastructure	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	215	16.04.2021	1		Street furniture	Park/plaza	Improper	Not upright		Blocking pedestrian right-of-way
O1	216	16.04.2021	9		Bike parking	Park/plaza	Proper	Upright	In suitable parking zone	
O1	217	16.04.2021	5		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	218	16.04.2021	8		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	219	16.04.2021	2		Pedestrian passageway	School	Improper	Upright		Blocking pedestrian right-of-way
O1	220	16.04.2021	10		Pedestrian passageway	School	Proper	Upright	Not blocking other's right of way	
O1	221	16.04.2021	9		Public transportation stop	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	222	16.04.2021	1		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	223	16.04.2021	3		Bike parking	Park/plaza	Proper	Upright	In suitable parking zone	
O1	224	16.04.2021	2		Entrance	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O1	225	16.04.2021	1		Entrance	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O1	226	16.04.2021	1		Entrance	School	Improper	Upright		Blocking pedestrian right-of-way
O1	227	16.04.2021	4		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	228	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	229	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	230	16.04.2021	2		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	231	16.04.2021	1		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	232	16.04.2021	1		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	233	16.04.2021	1		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	234	16.04.2021	1		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	235	16.04.2021	4		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	236	16.04.2021	1		Street furniture	Park/plaza	Improper	Not upright		Obstructing access to street furniture
O1	237	16.04.2021	4		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	238	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Not upright		Leaning on wall / street furniture / vegetation
O1	239	16.04.2021	1		Pedestrian passageway	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	240	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Not upright		Blocking pedestrian right-of-way
O1	241	16.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	242	16.04.2021	1		Technical infrastructure	Park/plaza	Improper	Not upright		Blocking pedestrian right-of-way
O1	243	16.04.2021	3		Greenery (grass, plants, trees)	Park/plaza	Improper	Not upright		Blocking pedestrian right-of-way
O1	244	16.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	245	16.04.2021	2		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	246	16.04.2021	5		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	247	16.04.2021	1		Pedestrian passageway	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	248	16.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	249	16.04.2021	1		Pedestrian passageway	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	250	16.04.2021	4		Pedestrian passageway	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	251	16.04.2021	3		Pedestrian passageway	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	252	16.04.2021	2		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	In street furniture zone	
O1	253	16.04.2021	1		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	254	16.04.2021	1		Technical infrastructure	Offices	Proper	Upright	Not blocking other's right of way	

O1	255	16.04.2021	1		Pedestrian passageway	Retail	Improper	Not upright		Blocking pedestrian right-of-way
O1	256	16.04.2021	1		Bike parking	Retail	Proper	Upright	In suitable parking zone	
O1	257	16.04.2021	5		Bike parking	Retail	Proper	Upright	In suitable parking zone	
O1	258	16.04.2021	3		Greenery (grass, plants, trees)	Retail	Proper	Upright	In street furniture zone	
O1	259	16.04.2021	2		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	260	16.04.2021	1		Street furniture	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	261	16.04.2021	1		Bike parking	Retail	Proper	Upright	In suitable parking zone	
O1	262	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	263	16.04.2021	1		Entrance	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	264	16.04.2021	1		Street furniture	Retail	Proper	Upright	In street furniture zone	
O1	265	16.04.2021	2		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	266	16.04.2021	1		Entrance	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	267	16.04.2021	2		Street furniture	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	268	16.04.2021	1		Street furniture	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	269	16.04.2021	1		Street furniture	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	270	16.04.2021	1		Street furniture	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	271	16.04.2021	1		Entrance	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	272	16.04.2021	2		Entrance	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	273	16.04.2021	3		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	274	16.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	275	16.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Not upright		Blocking pedestrian right-of-way
O1	276	16.04.2021	1		Street furniture	Retail	Proper	Upright	In street furniture zone	
O1	277	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	278	16.04.2021	1		Street furniture	Restaurant/bar/café/leisure	Proper	Upright	In street furniture zone	
O1	279	16.04.2021	1		Bike parking	Restaurant/bar/café/leisure	Proper	Upright	In suitable parking zone	
O1	280	16.04.2021	2		Street furniture	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	281	16.04.2021	1		Street furniture	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	282	16.04.2021	1		Bikeshare station	Retail	Improper	Upright		Obstructing access to bikeshare station
O1	283	16.04.2021	4		Technical infrastructure	Retail	Proper	Upright	In street furniture zone	
O1	284	16.04.2021	3		Technical infrastructure	Retail	Proper	Upright	In street furniture zone	
O1	285	16.04.2021	1		Technical infrastructure	Retail	Improper	Not upright		Leaning on wall / street furniture / vegetation
O1	286	16.04.2021	2		Bike parking	Restaurant/bar/café/leisure	Proper	Upright	In suitable parking zone	
O1	287	16.04.2021	2		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	288	16.04.2021	4		Street furniture	Retail	Proper	Upright	In street furniture zone	
O1	289	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	290	16.04.2021	1		Street furniture	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	291	16.04.2021	1		Technical infrastructure	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	292	16.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Not upright		Blocking pedestrian right-of-way
O1	293	16.04.2021	9		Street furniture	Retail	Proper	Upright	In street furniture zone	
O1	294	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	295	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	296	16.04.2021	1		Public transportation stop	Retail	Proper	Upright	Not blocking other's right of way	
O1	297	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	298	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	299	16.04.2021	5		Pedestrian passageway	Retail	Proper	Upright	Not blocking other's right of way	
O1	300	16.04.2021	5		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	301	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	302	16.04.2021	2		Street furniture	Restaurant/bar/café/leisure	Improper	Upright		Obstructing access to street furniture
O1	303	16.04.2021	2		Street furniture	Restaurant/bar/café/leisure	Improper	Upright		Obstructing access to street furniture
O1	304	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	305	16.04.2021	1		Technical infrastructure	Park/plaza	Proper	Upright	In street furniture zone	
O1	306	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	307	16.04.2021	1		Bike parking	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	308	16.04.2021	1		Bike parking	Park/plaza	Proper	Upright	In suitable parking zone	
O1	309	16.04.2021	1		Bike parking	Park/plaza	Proper	Upright	In suitable parking zone	
O1	310	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	311	16.04.2021	2		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	312	16.04.2021	6		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	313	16.04.2021	2		Pedestrian passageway	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	314	16.04.2021	1		Street furniture	Offices	Proper	Upright	In street furniture zone	
O1	315	16.04.2021	4		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	316	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	317	16.04.2021	11		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	318	16.04.2021	2		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
O1	319	16.04.2021	2		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	320	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	321	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	322	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	323	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	324	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	325	16.04.2021	2		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	326	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	327	16.04.2021	6		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	328	16.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O1	329	16.04.2021	1		Pedestrian passageway	Retail	Proper	Upright	Not blocking other's right of way	
O1	330	16.04.2021	1		Street furniture	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	331	16.04.2021	2		Pedestrian passageway	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O1	332	16.04.2021	1		Pedestrian passageway	Retail	Proper	Upright	Not blocking other's right of way	
O1	333	16.04.2021	1		Street furniture	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O1	334	16.04.2021	1		Street furniture	Offices	Proper	Upright	In street furniture zone	
O1	335	16.04.2021	1		Street furniture	Offices	Proper	Upright	Not blocking other's right of way	
O1	336	16.04.2021	3		Street furniture	Offices	Proper	Upright	In street furniture zone	
O1	337	16.04.2021	1		Technical infrastructure	Retail	Proper	Upright	Not blocking other's right of way	
O1	338	16.04.2021	2		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	339	16.04.2021	2		Pedestrian passageway	Retail	Proper	Upright	Not blocking other's right of way	
O1	340	16.04.2021	3		Technical infrastructure	Retail	Proper	Upright	Not blocking other's right of way	
O1	341	16.04.2021	1		Street furniture	Retail	Proper	Upright	In street furniture zone	
O1	342	16.04.2021	14		Public transportation stop	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	343	16.04.2021	7		Public transportation stop	Park/plaza	Proper	Upright	Not blocking other's right of way	
O1	344	16.04.2021	2		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	345	16.04.2021	15		Pedestrian passageway	Offices	Proper	Upright	Not blocking other's right of way	
O1	346	16.04.2021	2		Entrance	Offices	Proper	Upright	Not blocking other's right of way	
O1	347	16.04.2021	2		Pedestrian passageway	Offices	Improper	Not upright		Blocking pedestrian right-of-way
O1	348	16.04.2021	4		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
O1	349	16.04.2021	1		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
O1	350	16.04.2021	4		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
O1	351	16.04.2021	1		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
O1	352	16.04.2021	1		Greenery (grass, plants, trees)	Offices	Improper	Not upright		Leaning on wall / street furniture / vegetation
O1	353	16.04.2021	1		Greenery (grass, plants, trees)	Offices	Improper	Upright		On greenery
O1	354	16.04.2021	1		Greenery (grass, plants, trees)	Offices	Improper	Upright		On greenery
O1	355	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	356	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	357	16.04.2021	1		Pedestrian passageway	Residential	Improper	Not upright		Leaning on wall / street furniture / vegetation
O1	358	16.04.2021	1		Bikeshare station	Residential	Improper	Upright		Obstructing access to bikeshare station
O1	359	16.04.2021	1		Bikeshare station	Residential	Improper	Upright		Obstructing access to bikeshare station
O1	360	16.04.2021	1		Technical infrastructure	Off-street parking	Proper	Upright	Not blocking other's right of way	
O1	361	16.04.2021	1	Parking lane		Off-street parking	Improper	Upright		Blocking vehicle right-of-way
O1	362	16.04.2021	3		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	363	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	364	16.04.2021	3		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	365	16.04.2021	2		Entrance	Residential	Proper	Upright	In street furniture zone	
O1	366	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	367	16.04.2021	1		Entrance	Offices	Improper	Upright		Blocking pedestrian right-of-way
O1	368	16.04.2021	1		Entrance	Offices	Proper	Upright	Not blocking other's right of way	
O1	369	16.04.2021	3		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	370	16.04.2021	1		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
O1	371	16.04.2021	2		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	372	16.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O1	373	16.04.2021	2		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	374	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	375	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	376	16.04.2021	2		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O1	377	16.04.2021	1		Bike parking	Park/plaza	Proper	Upright	In suitable parking zone	
O1	378	16.04.2021	1		Bike parking	Park/plaza	Proper	Upright	In suitable parking zone	
O1	379	16.04.2021	1		Bike parking	Park/plaza	Proper	Upright	In suitable parking zone	
O1	380	16.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	381	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	382	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way

O1	383	16.04.2021	1		Pedestrian passageway	Residential	Improper	Not upright		Leaning on wall / street furniture / vegetation
O1	384	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	385	16.04.2021	1		Pedestrian passageway	Residential	Improper	Not upright		Leaning on wall / street furniture / vegetation
O1	386	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	387	16.04.2021	1		Pedestrian passageway	Residential	Improper	Not upright		Leaning on wall / street furniture / vegetation
O1	388	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	389	16.04.2021	1	Parking lane		Residential	Improper	Upright		Blocking vehicle right-of-way
O1	390	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	391	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	392	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	393	16.04.2021	1		Technical infrastructure	Residential	Proper	Upright	Not blocking other's right of way	
O1	394	16.04.2021	1		Pedestrian passageway	Residential	Proper	Upright	Not blocking other's right of way	
O1	395	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	396	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	397	16.04.2021	1		Technical infrastructure	Retail	Proper	Upright	Not blocking other's right of way	
O1	398	16.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O1	399	16.04.2021	3		Greenery (grass, plants, trees)	Retail	Proper	Upright	Not blocking other's right of way	
O1	400	16.04.2021	1		Entrance	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O1	401	16.04.2021	2		Street furniture	Restaurant/bar/café/leisure	Improper	Upright		Obstructing access to street furniture
O1	402	16.04.2021	3		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	403	16.04.2021	2		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	404	16.04.2021	17		Technical infrastructure	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O1	405	16.04.2021	2		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	406	16.04.2021	3		Bike parking	Restaurant/bar/café/leisure	Proper	Upright	In suitable parking zone	
O1	407	16.04.2021	6		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	408	16.04.2021	1		Street furniture	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	409	16.04.2021	7		Technical infrastructure	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O1	410	16.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	411	16.04.2021	2		Public transportation stop	Residential	Proper	Upright	Not blocking other's right of way	
O1	412	16.04.2021	1		Greenery (grass, plants, trees)	Retail	Proper	Upright	Not blocking other's right of way	
O1	413	16.04.2021	1		Technical infrastructure	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	414	16.04.2021	1		E-scooter parking	Retail	Proper	Upright	In suitable parking zone	
O1	415	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	416	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	417	16.04.2021	2		Pedestrian passageway	Retail	Proper	Upright	Not blocking other's right of way	
O1	418	16.04.2021	1		Pedestrian passageway	Retail	Improper	Not upright		Leaning on wall / street furniture / vegetation
O1	419	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	420	16.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Improper	Upright		On greenery
O1	421	16.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Improper	Not upright		On greenery
O1	422	16.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O1	423	16.04.2021	2		Pedestrian passageway	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O1	424	16.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O1	425	16.04.2021	4		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
O1	426	16.04.2021	1		Technical infrastructure	Offices	Proper	Upright	Not blocking other's right of way	
O1	427	16.04.2021	3		Entrance	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O1	428	16.04.2021	2		Bike parking	Offices	Proper	Upright	In suitable parking zone	
O1	429	16.04.2021	1		Entrance	Offices	Proper	Upright	Not blocking other's right of way	
O1	430	16.04.2021	1		Entrance	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	431	16.04.2021	2	Parking lane		Residential	Improper	Upright		On private property
O1	432	16.04.2021	3		Entrance	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	433	16.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O1	434	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	435	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	436	16.04.2021	2		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	437	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O1	438	16.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	1	19.04.2021	2		Bikeshare station	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	2	19.04.2021	4		Pedestrian passageway	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	3	19.04.2021	3		Greenery (grass, plants, trees)	Park/plaza	Improper	Upright		On greenery
O2	4	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	5	19.04.2021	1		Street furniture	Park/plaza	Improper	Not upright		Blocking pedestrian right-of-way
O2	6	19.04.2021	3		Street furniture	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	7	19.04.2021	1		Greenery (grass, plants, trees)	Residential	Improper	Not upright		On greenery
O2	8	19.04.2021	1		Entrance	Residential	Improper	Not upright		On greenery
O2	9	19.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Improper	Upright		On greenery
O2	10	19.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Improper	Upright		On greenery
O2	11	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Not upright		Blocking pedestrian right-of-way
O2	12	19.04.2021	4		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	13	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	14	19.04.2021	2		Pedestrian passageway	Park/plaza	Improper	Not upright		Blocking pedestrian right-of-way
O2	15	19.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Improper	Not upright		On greenery
O2	16	19.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	17	19.04.2021	1		Entrance	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	18	19.04.2021	3	Parking lane		Residential	Improper	Upright		Blocking vehicle right-of-way
O2	19	19.04.2021	1		Technical infrastructure	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	20	19.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Improper	Upright		On greenery
O2	21	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	22	19.04.2021	1		Entrance	Residential	Proper	Upright	Not blocking other's right of way	
O2	23	19.04.2021	2		Entrance	Residential	Proper	Upright	Not blocking other's right of way	
O2	24	19.04.2021	1		Entrance	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	25	19.04.2021	2		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	26	19.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	27	19.04.2021	1		Entrance	Residential	Proper	Upright	Not blocking other's right of way	
O2	28	19.04.2021	1		Entrance	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	29	19.04.2021	4		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	30	19.04.2021	1		Technical infrastructure	School	Improper	Not upright		Leaning on wall / street furniture / vegetation
O2	31	19.04.2021	1		Greenery (grass, plants, trees)	School	Proper	Upright	Not blocking other's right of way	
O2	32	19.04.2021	2		Entrance	Residential	Improper	Upright		On private property
O2	33	19.04.2021	1		Greenery (grass, plants, trees)	Residential	Improper	Upright		On greenery
O2	34	19.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	35	19.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	36	19.04.2021	1		Entrance	Residential	Proper	Upright	Not blocking other's right of way	
O2	37	19.04.2021	3		Public transportation stop	Retail	Proper	Upright	Not blocking other's right of way	
O2	38	19.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O2	39	19.04.2021	1		Pedestrian passageway	Retail	Proper	Upright	Not blocking other's right of way	
O2	40	19.04.2021	2		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O2	41	19.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O2	42	19.04.2021	1		Street furniture	Retail	Improper	Upright		Blocking pedestrian right-of-way
O2	43	19.04.2021	2		Street furniture	Retail	Proper	Upright	Not blocking other's right of way	
O2	44	19.04.2021	7		Pedestrian passageway	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	45	19.04.2021	6		Technical infrastructure	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	46	19.04.2021	10		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O2	47	19.04.2021	1		Street furniture	Park/plaza	Improper	Upright		Obstructing access to street furniture
O2	48	19.04.2021	6		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O2	49	19.04.2021	1		Technical infrastructure	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	50	19.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	51	19.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O2	52	19.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O2	53	19.04.2021	2		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	54	19.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Not upright		Blocking pedestrian right-of-way
O2	55	19.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O2	56	19.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O2	57	19.04.2021	1		Entrance	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	58	19.04.2021	2		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	59	19.04.2021	1		Street furniture	Off-street parking	Proper	Upright	In street furniture zone	
O2	60	19.04.2021	2		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	61	19.04.2021	2		Greenery (grass, plants, trees)	Park/plaza	Improper	Upright		On greenery
O2	62	19.04.2021	1		Street furniture	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	63	19.04.2021	1		Greenery (grass, plants, trees)	Off-street parking	Improper	Upright		On greenery
O2	64	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	65	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	66	19.04.2021	2		Pedestrian passageway	School	Improper	Upright		
O2	67	19.04.2021	6		Pedestrian passageway	School	Proper	Upright	Not blocking other's right of way	
O2	68	19.04.2021	2		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	69	19.04.2021	1		Pedestrian passageway	Residential	Improper	Not upright		Blocking pedestrian right-of-way
O2	70	19.04.2021	1		Pedestrian passageway	Residential	Proper	Upright	Not blocking other's right of way	
O2	71	19.04.2021	1		Pedestrian passageway	Residential	Proper	Upright	Not blocking other's right of way	
O2	72	19.04.2021	2		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way

O2	73	19.04.2021	2		Technical infrastructure	Residential	Proper	Upright	Not blocking other's right of way	
O2	74	19.04.2021	1		Technical infrastructure	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	75	19.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Improper	Upright		On greenery
O2	76	19.04.2021	2		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	77	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	78	19.04.2021	3		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	79	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	80	19.04.2021	1		Technical infrastructure	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	81	19.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Improper	Upright		On greenery
O2	82	19.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	83	19.04.2021	6		Entrance	Residential	Proper	Upright	Not blocking other's right of way	
O2	84	19.04.2021	1		Entrance	Residential	Proper	Upright	Not blocking other's right of way	
O2	85	19.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	86	19.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	87	19.04.2021	2		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	88	19.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Improper	Not upright		On greenery
O2	89	19.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Improper	Not upright		On greenery
O2	90	19.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	91	19.04.2021	4		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	92	19.04.2021	2		Technical infrastructure	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	93	19.04.2021	4		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	94	19.04.2021	2		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	95	19.04.2021	1		Technical infrastructure	Residential	Proper	Upright	Not blocking other's right of way	
O2	96	19.04.2021	3		Greenery (grass, plants, trees)	Park/plaza	Improper	Not upright		Leaning on wall / street furniture / vegetation
O2	97	19.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	98	19.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	99	19.04.2021	3		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	100	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	101	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	102	19.04.2021	3		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	103	19.04.2021	2		Pedestrian passageway	Residential	Proper	Upright	Not blocking other's right of way	
O2	104	19.04.2021	2		Pedestrian passageway	Residential	Improper	Not upright		Blocking pedestrian right-of-way
O2	105	19.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O2	106	19.04.2021	2		Pedestrian passageway	Retail	Proper	Upright	Not blocking other's right of way	
O2	107	19.04.2021	4		Pedestrian passageway	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	108	19.04.2021	6		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	109	19.04.2021	3		Pedestrian passageway	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	110	19.04.2021	3		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	111	19.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Improper	Upright		On greenery
O2	112	19.04.2021	2		Technical infrastructure	Park/plaza	Improper	Upright		On greenery
O2	113	19.04.2021	3		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	114	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	115	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	116	19.04.2021	3		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O2	117	19.04.2021	2		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O2	118	19.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O2	119	19.04.2021	1		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
O2	120	19.04.2021	1		Pedestrian passageway	Retail	Improper	Not upright		Blocking pedestrian right-of-way
O2	121	19.04.2021	2		Bike parking	Restaurant/bar/café/leisure	Proper	Upright	In suitable parking zone	
O2	122	19.04.2021	2		Pedestrian passageway	Retail	Proper	Upright	Not blocking other's right of way	
O2	123	19.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O2	124	19.04.2021	3		Bike parking	Restaurant/bar/café/leisure	Proper	Upright	In suitable parking zone	
O2	125	19.04.2021	2		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O2	126	19.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O2	127	19.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O2	128	19.04.2021	2		Bike parking	Retail	Proper	Upright	In suitable parking zone	
O2	129	19.04.2021	2		Bike parking	Retail	Proper	Upright	In suitable parking zone	
O2	130	19.04.2021	4		Bike parking	Retail	Proper	Upright	In suitable parking zone	
O2	131	19.04.2021	1		Pedestrian passageway	Retail	Proper	Upright	Not blocking other's right of way	
O2	132	19.04.2021	2		Pedestrian passageway	Retail	Proper	Upright	Not blocking other's right of way	
O2	133	19.04.2021	1		Pedestrian passageway	Retail	Proper	Upright	Not blocking other's right of way	
O2	134	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	135	19.04.2021	3		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	136	19.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Improper	Upright		On greenery
O2	137	19.04.2021	4		Street furniture	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	138	19.04.2021	1		Street furniture	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	139	19.04.2021	3		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	140	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	141	19.04.2021	1		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
O2	142	19.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O2	143	19.04.2021	1		Bike parking	Restaurant/bar/café/leisure	Proper	Upright	In suitable parking zone	
O2	144	19.04.2021	1		Entrance	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O2	145	19.04.2021	1		Bike parking	Retail	Proper	Upright	In suitable parking zone	
O2	146	19.04.2021	1		Bike parking	Restaurant/bar/café/leisure	Proper	Upright	In street furniture zone	
O2	147	19.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	148	19.04.2021	1		Technical infrastructure	Residential	Improper	Not upright		Leaning on wall / street furniture / vegetation
O2	149	19.04.2021	1		Bike parking	Residential	Proper	Upright	In suitable parking zone	
O2	150	19.04.2021	2		Technical infrastructure	Residential	Proper	Upright	Not blocking other's right of way	
O2	151	19.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
O2	152	19.04.2021	1		Bike parking	Retail	Proper	Upright	In suitable parking zone	
O2	153	19.04.2021	1		Entrance	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O2	154	19.04.2021	1	Parking lane		Retail	Improper	Upright		Blocking vehicle right-of-way
O2	155	19.04.2021	10		Pedestrian passageway	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O2	156	19.04.2021	2		Pedestrian passageway	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	157	19.04.2021	1		E-scooter parking	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	158	19.04.2021	2		E-scooter parking	Park/plaza	Proper	Upright	In suitable parking zone	
O2	159	19.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O2	160	19.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O2	161	19.04.2021	3		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	162	19.04.2021	1		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O2	163	19.04.2021	1		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O2	164	19.04.2021	1		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O2	165	19.04.2021	1		Technical infrastructure	Park/plaza	Proper	Upright	In street furniture zone	
O2	166	19.04.2021	1		Pedestrian passageway	Retail	Proper	Upright	Not blocking other's right of way	
O2	167	19.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O2	168	19.04.2021	8		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O2	169	19.04.2021	2		Street furniture	Retail	Proper	Upright	Not blocking other's right of way	
O2	170	19.04.2021	1		Bikeshare station	Retail	Improper	Upright		Obstructing access to bikeshare station
O2	171	19.04.2021	1		Bikeshare station	Retail	Proper	Upright	Not blocking other's right of way	
O2	172	19.04.2021	7		Pedestrian passageway	Retail	Proper	Upright	Not blocking other's right of way	
O2	173	19.04.2021	1		Street furniture	Retail	Proper	Upright	Not blocking other's right of way	
O2	174	19.04.2021	5		E-scooter parking	Retail	Proper	Upright	In suitable parking zone	
O2	175	19.04.2021	1		Bike parking	Retail	Proper	Upright	In suitable parking zone	
O2	176	19.04.2021	2		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O2	177	19.04.2021	1		Street furniture	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	178	19.04.2021	1		Street furniture	Park/plaza	Improper	Not upright		Leaning on wall / street furniture / vegetation
O2	179	19.04.2021	5		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O2	180	19.04.2021	1		Technical infrastructure	Retail	Improper	Upright		Blocking pedestrian right-of-way
O2	181	19.04.2021	7		Pedestrian passageway	Retail	Proper	Upright	Not blocking other's right of way	
O2	182	19.04.2021	1		Street furniture	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
O2	183	19.04.2021	1		Street furniture	Retail	Proper	Upright	Not blocking other's right of way	
O2	184	19.04.2021	1		Street furniture	Retail	Proper	Upright	In street furniture zone	
O2	185	19.04.2021	1		Entrance	Retail	Proper	Upright	Not blocking other's right of way	
O2	186	19.04.2021	2		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
O2	187	19.04.2021	5		Street furniture	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	188	19.04.2021	2		Street furniture	Park/plaza	Improper	Not upright		Blocking pedestrian right-of-way
O2	189	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	190	19.04.2021	2		Technical infrastructure	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O2	191	19.04.2021	3		Pedestrian passageway	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
O2	192	19.04.2021	4		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	193	19.04.2021	1		Street furniture	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	194	19.04.2021	2		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	195	19.04.2021	1		Technical infrastructure	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	196	19.04.2021	1		Street furniture	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	197	19.04.2021	1		Technical infrastructure	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	198	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	199	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	200	19.04.2021	1		Street furniture	Park/plaza	Proper	Upright	Not blocking other's right of way	

O2	201	19.04.2021	1		Technical infrastructure	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	202	19.04.2021	1		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O2	203	19.04.2021	1		Street furniture	Park/plaza	Improper	Not upright		Blocking pedestrian right-of-way
O2	204	19.04.2021	4		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	205	19.04.2021	4		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	206	19.04.2021	1		Bike parking	Park/plaza	Proper	Upright	In suitable parking zone	
O2	207	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	208	19.04.2021	2		Pedestrian passageway	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	209	19.04.2021	2		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	210	19.04.2021	1		E-scooter parking	Park/plaza	Proper	Upright	In suitable parking zone	
O2	211	19.04.2021	2		E-scooter parking	Park/plaza	Proper	Upright	In suitable parking zone	
O2	212	19.04.2021	1		E-scooter parking	Park/plaza	Proper	Upright	In suitable parking zone	
O2	213	19.04.2021	3		Pedestrian passageway	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	214	19.04.2021	2		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	In street furniture zone	
O2	215	19.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	In street furniture zone	
O2	216	19.04.2021	5		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O2	217	19.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	In street furniture zone	
O2	218	19.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Proper	Upright	In street furniture zone	
O2	219	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	220	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	221	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	222	19.04.2021	2		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O2	223	19.04.2021	1		Pedestrian passageway	Park/plaza	Proper	Upright	Not blocking other's right of way	
O2	224	19.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
O2	225	19.04.2021	8		Street furniture	Park/plaza	Proper	Upright	In street furniture zone	
O2	226	19.04.2021	1		Street furniture	Park/plaza	Improper	Not upright		Leaning on wall / street furniture / vegetation

Attachment 3: Fredrikstad analysis of e-scooter observations

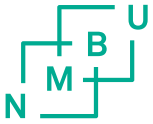
Observ.ID	Photo.ID	Date	e-scooter	Street-side attributes	Pavement attributes	Non-street-side attributes	Type of parking	Position	Proper	Improper
F1	1	15.04.2021	1		Street furniture	Retail	Proper	Upright	In street furniture zone	
F1	2	15.04.2021	1		Street furniture	Retail	Proper	Upright	In street furniture zone	
F1	3	15.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
F1	4	15.04.2021	1	Travel lane		Restaurant/bar/café/leisure	Improper	Upright		Blocking vehicle right-of-way
F1	5	15.04.2021	1		Bike parking	Restaurant/bar/café/leisure	Proper	Upright	In suitable parking zone	
F1	6	15.04.2021	1		Public transportation stop	Retail	Improper	Upright		Blocking pedestrian right-of-way
F1	7	15.04.2021	1		Public transportation stop	Retail	Improper	Upright		Invonvenient at public transportation stop
F1	8	15.04.2021	1		Bike parking	Retail	Proper	Upright	In suitable parking zone	
F1	9	15.04.2021	2		Bike parking	Retail	Proper	Upright	In suitable parking zone	
F1	10	15.04.2021	1		Bike parking	Retail	Proper	Upright	In suitable parking zone	
F1	11	15.04.2021	8		Street furniture	Retail	Proper	Upright	In street furniture zone	
F1	12	15.04.2021	2		Other parking	Retail	Proper	Upright	In suitable parking zone	
F1	13	15.04.2021	1		Other parking	Retail	Proper	Upright	In suitable parking zone	
F1	14	15.04.2021	1		Pedestrian passageway	Off-street parking	Proper	Upright	Not blocking other's right of way	
F1	15	15.04.2021	1		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
F1	16	15.04.2021	1		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
F1	17	15.04.2021	2		Pedestrian passageway	Off-street parking	Improper	Upright		Blocking pedestrian right-of-way
F1	18	15.04.2021	1		Street furniture	Off-street parking	Improper	Not upright		Leaning on wall / street furniture / vegetation
F1	19	15.04.2021	1		Fire hydrant	Retail	Improper	Upright		Blocking pedestrian right-of-way
F1	20	15.04.2021	2		Pedestrian passageway	Retail	Improper	Not upright		Blocking pedestrian right-of-way
F1	21	15.04.2021	1		Technical infrastructure	Retail	Proper	Upright	Not blocking other's right of way	
F1	22	15.04.2021	1		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way
F1	23	15.04.2021	1		Bike parking	Restaurant/bar/café/leisure	Proper	Upright	In suitable parking zone	
F1	24	15.04.2021	1		Bike parking	Restaurant/bar/café/leisure	Proper	Upright	In suitable parking zone	
F1	25	15.04.2021	1		Street furniture	Retail	Proper	Upright	Not blocking other's right of way	
F1	26	15.04.2021	1		Technical infrastructure	Retail	Improper	Upright		Blocking pedestrian right-of-way
F1	27	15.04.2021	1		Bike parking	Park/plaza	Proper	Upright	In suitable parking zone	
F1	28	15.04.2021	1		Entrance	Restaurant/bar/café/leisure	Proper	Upright	Not blocking other's right of way	
F1	29	15.04.2021	1		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
F1	30	15.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
F1	31	15.04.2021	1		Technical infrastructure	Residential	Improper	Upright		Blocking pedestrian right-of-way
F1	32	15.04.2021	7	Parking lane		Off-street parking	Improper	Upright		Blocking vehicle right-of-way
F1	33	15.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
F1	34	15.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
F1	35	15.04.2021	1	Parking lane		Off-street parking	Improper	Upright		Blocking vehicle right-of-way
F1	36	15.04.2021	1		Pedestrian passageway	Off-street parking	Improper	Upright		Blocking pedestrian right-of-way
F1	37	15.04.2021	3		Public transportation stop	Retail	Improper	Upright		Blocking pedestrian right-of-way
F1	38	15.04.2021	1	Parking lane		Retail	Proper	Upright	Not blocking other's right of way	
F2	1	20.04.2021	3	Parking lane	Public transportation stop	Off-street parking	Proper	Upright	Not blocking other's right of way	
F2	2	20.04.2021	4	Parking lane	Public transportation stop	Off-street parking	Proper	Upright	Not blocking other's right of way	
F2	3	20.04.2021	3		Public transportation stop	Offices	Proper	Upright	Not blocking other's right of way	
F2	4	20.04.2021	1		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
F2	5	20.04.2021	1		Greenery (grass, plants, trees)	Park/plaza	Improper	Not upright		On greenery
F2	6	20.04.2021	1		Entrance	School	Improper	Upright		Blocking pedestrian right-of-way
F2	7	20.04.2021	1		Pedestrian passageway	Offices	Improper	Upright		Blocking pedestrian right-of-way
F2	8	20.04.2021	1		Greenery (grass, plants, trees)	Offices	Improper	Not upright		On greenery
F2	9	20.04.2021	1		Entrance	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
F2	10	20.04.2021	1		Street furniture	Restaurant/bar/café/leisure	Improper	Not upright		Obstructing access to street furniture
F2	11	20.04.2021	1		Entrance	Offices	Proper	Upright	Not blocking other's right of way	
F2	12	20.04.2021	1		Entrance	School	Proper	Upright	Not blocking other's right of way	
F2	13	20.04.2021	1		Pedestrian passageway	Off-street parking	Improper	Not upright		Leaning on wall / street furniture / vegetation
F2	14	20.04.2021	1		Pedestrian passageway	Off-street parking	Improper	Upright		Blocking pedestrian right-of-way
F2	15	20.04.2021	1		Pedestrian passageway	Off-street parking	Improper	Not upright		Leaning on wall / street furniture / vegetation
F2	16	20.04.2021	1		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Upright		Blocking pedestrian right-of-way
F2	17	20.04.2021	1		Entrance	Residential	Improper	Not upright		On private property
F2	18	20.04.2021	1		Entrance	Residential	Improper	Upright		On private property
F2	19	20.04.2021	1	Travel lane		Residential	Improper	Not upright		Blocking vehicle right-of-way
F2	20	20.04.2021	1		Technical infrastructure	Residential	Improper	Not upright		Leaning on wall / street furniture / vegetation
F2	21	20.04.2021	1		Greenery (grass, plants, trees)	Residential	Improper	Upright		On greenery
F2	22	20.04.2021	1	Parking lane		School	Improper	Upright		Blocking vehicle right-of-way
F2	23	20.04.2021	2		Greenery (grass, plants, trees)	Residential	Proper	Upright	Not blocking other's right of way	
F2	24	20.04.2021	1		Entrance	Residential	Improper	Upright		On private property
F2	25	20.04.2021	1	Travel lane	Greenery (grass, plants, trees)	Residential	Proper	Upright	Not blocking other's right of way	
F2	26	20.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
F2	27	20.04.2021	1		Pedestrian passageway	Residential	Improper	Not upright		Leaning on wall / street furniture / vegetation
F2	28	20.04.2021	1	Travel lane		Residential	Improper	Upright		Blocking vehicle right-of-way
F2	29	20.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
F2	30	20.04.2021	1		Street furniture	Residential	Proper	Upright	In street furniture zone	
F2	31	20.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
F2	32	20.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
F2	33	20.04.2021	1		Pedestrian passageway	Park/plaza	Improper	Upright		Blocking pedestrian right-of-way
F2	34	20.04.2021	1		Street furniture	School	Proper	Upright	In street furniture zone	
F2	35	20.04.2021	1	Travel lane	Entrance	School	Improper	Not upright		Blocking vehicle right-of-way
F2	36	20.04.2021	1		Bike parking	Retail	Proper	Upright	In suitable parking zone	
F2	37	20.04.2021	1	Parking lane		Off-street parking	Improper	Upright		Blocking vehicle right-of-way
F2	38	20.04.2021	2		Greenery (grass, plants, trees)	Residential	Proper	Upright	Not blocking other's right of way	
F2	39	20.04.2021	1		Greenery (grass, plants, trees)	Residential	Improper	Upright		On greenery
F2	40	20.04.2021	1		Greenery (grass, plants, trees)	Residential	Improper	Upright		On greenery
F2	41	20.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
F2	42	20.04.2021	2		Pedestrian passageway	Residential	Improper	Upright		Blocking vehicle right-of-way
F2	43	20.04.2021	1		Entrance	Residential	Proper	Upright	Not blocking other's right of way	
F2	44	20.04.2021	1		Pedestrian passageway	Residential	Improper	Upright		Blocking pedestrian right-of-way
F2	45	20.04.2021	1		Bike parking	Retail	Improper	Not upright		Leaning on wall / street furniture / vegetation
F2	46	20.04.2021	2		Bike parking	Retail	Proper	Upright	In suitable parking zone	
F2	47	20.04.2021	2		Bike parking	Retail	Proper	Upright	In suitable parking zone	
F2	48	20.04.2021	1		Public transportation stop	Retail	Improper	Upright		Invonvenient at public transportation stop
F2	49	20.04.2021	2		Pedestrian passageway	Restaurant/bar/café/leisure	Improper	Not upright		Blocking pedestrian right-of-way
F2	50	20.04.2021	1		Public transportation stop	Retail	Improper	Upright		Invonvenient at public transportation stop
F2	51	20.04.2021	1		Public transportation stop	Retail	Improper	Upright		Invonvenient at public transportation stop
F2	52	20.04.2021	7		Pedestrian passageway	Retail	Improper	Upright		Blocking pedestrian right-of-way

Attachment 4:

Following are links to Goole Drive albums including the photos that was taken during the field observations in Oslo and Fredrikstad:

- Oslo day 1: https://photos.app.goo.gl/Vz5FAw4vwb7c87V88
- Oslo day 2: https://photos.app.goo.gl/gxWCAgoc3AYDcJDS6
- Fredrikstad day 1: https://photos.app.goo.gl/EE1omPcuqF7h6x3N8
- Fredrikstad day 2: https://photos.app.goo.gl/JaKxttrMVN3EL3Dd6

Photos that displayed licence plates of vehicles or peoples' face has been withdrawn from the albums.



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