POLIS
CITIES AND REGIONS FOR TRANSPORT INNOVATION

Governance
& Integration

Catch me if you can!

How European Cities are regulating Shared Micromobility

November 2023

Catching up!

POLIS is the leading network of European cities and regions advancing transport innovation. Not innovation as an end in itself – specifically, innovations that can make urban mobility become more sustainable, safe, and equitable.

The almost one hundred local and regional governments and transport authorities that have joined POLIS did not come to manage the status quo. Quite the contrary. Many joined because they want to pursue innovation and seek support in developing new approaches, policies and tools.

Others joined because innovation came 'knocking on their door' – as in 2018, for example, when shared micromobility operators started deploying thousands of e-scooters, and the **POLIS' Governance & Integration Working Group** became a forum to discuss 'What do we do now?'.

We have followed through since then, supporting knowledge transfer, tackling specific issues through briefs, meetings and webinars, and fostering a structured and constructive dialogue with operators. This is an action network – we seek solutions, and if they don't exist, we help build them.

When looking at an e-scooter, it is interesting to note how such a small vehicle has gained so much attention, from policy and research, local and social media, and public and private decision-makers.

In a way, it reminds me of that famous African proverb, 'If you think you are too small to make a difference, try sleeping with a mosquito'. Shared e-scooters do not suck our blood (!!!), but they do keep us awake. In a way, because they force us to look at the bigger picture.

What do we do when a new transport mode arrives on our car-centric roads and regulations? The public right of way is a finite resource. We cannot just 'add space' for this new mode, we must make choices. Reallocating space and reducing speeds is a hard choice, but it is a necessary choice – other approaching innovations will pose similar challenges, and will require similar choices.

Shared micromobility seems to be a highly dynamic business. And regulation has been striving to catch up and capture its potential public benefits. Not an easy job, to say the least. Inevitably, some mistakes were made, and lessons were learned.

It is fair to say, however, that in many cases substantive progress has been made as well. This is what we would like to share with you in this report. We hope it will help cities and regions, and their respective transport professionals, keep progressing.

That is what we are here for.

Karen Vancluysen
Secretary General, POLIS

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Executive Summary

How are cities and regions managing the regulation of shared micromobility? What are the key issues, insights and challenges that have emerged? We wanted to provide our members with a strategic perspective on this topic, drawing on insights from different sources to facilitate decision-making and promote dialogue between different stakeholders.

To this end, POLIS conducted a survey and several interviews with experts from local and regional authorities and private operators, as well as an extensive desk review, working group meetings and other interactions.

These interviews and the survey revealed a diverse and complex reality. Shared micromobility is not a static concept, but is constantly evolving to include different vehicles such as bicycles, e-bikes, cargo bikes, and e-scooters (and whatever comes next).

The whole process of regulating shared micromobility illustrates the challenges that arise when a new mode of transport tries to deploy and scale up its operations within an existing framework dominated by another mode of transport (in our case, the private car).

The fundamental question for the future is not only how we regulate these new modes, but also how long we are willing to perpetuate the car-centric legacy that has shaped our roads and road rules, and which is now blocking transport innovation. Achieving climate neutrality is not just a matter of balancing the books; it requires a deliberate change in our transport practices.

1. Introduction

Dig for the Latin origin of 'regulation' and you will find, deep in its roots, the concept of making things 'move in a straight line'. Not really an accurate description of how the regulation of shared micromobility has evolved, is it?

And yet, things are moving – in the five years that followed the arrival of floating e-scooters and e-bikes to European streets, many cities have been learning by doing. From prohibition to full-hearted adoption, and from open-door markets to highly competitive tenders, the landscape is quite varied.

To local and regional authorities, shared micromobility poses a governance challenge with many moving parts: it's about sustainability, but also about safety; innovation, but also disruption; enforcement of rules, but also negotiation; decisions, but also effective follow-through.

It can be argued that 'proper regulation' should be a prerequisite for the deployment of mobility services. Reality, however, begs to differ, and new mobility services have repeatedly undermined this belief. Innovation breeds disruption, and regulation inevitably follows.

This means that most local and regional authorities have been faced with the challenge of regulating something that was already in use. And, in many cases, to do so without clarity about what their regulatory power really is, let alone what its purpose should be.

How are cities and regions regulating shared micromobility? What are the key issues, insights and challenges that have emerged? We wanted to provide our members with a strategic perspective on this topic, one that is informed by multiple sources and designed to support decision-making and facilitate dialogue between different stakeholders.

To this end, POLIS conducted a survey and several interviews with front-line public practitioners and private operators. This report, which took a full year to develop (and what a year it was!), presents and discusses the results of that research.

2. Goals, Angle & Method

Since 2018, the opportunities and challenges posed by shared micromobility for local and regional authorities have been a major focus of the POLIS Governance and Integration Working Group. The discussions of this working group - which facilitates systematic exchanges between POLIS members, operators and other relevant stakeholders - have provided several useful insights and motivated a deeper analysis through two working documents: a discussion paper on the strategic approach, 'Macromanaging Micromobility: Taking the long view on short trips' (2019), and a survey report on the key operational issue, 'Sharing Data for Shared Micromobility' (2021).

The wider issue of regulation has loomed large in the micromobility horizon, and is the topic of this report. We set out looking for what's different, what's common, and, above all, for what's strategically important and can point us to a beneficial way forward for both public authorities and private operators.

2.1. Goals

POLIS is a network of local and regional authorities and this report has been developed primarily to support the work of our members. This is not a benchmarking report in the sense that 'benchmarking' means evaluating (something) against a standard or best in class. In the specific area of shared micromobility regulation, there is neither.

The main purpose of this report is to provide a strategic perspective on the specific issue of regulating shared micromobility. A perspective informed by multiple sources and designed to support decision-making and facilitate dialogue between different stakeholders. How do cities regulate shared micromobility services? What are the objectives of these regulations? How are they developed? What tools are they using? What challenges lie ahead?

2.2. Regulate for What?

Regulation is a tool, not an end in itself. An abstract review and discussion of rules, whatever their purpose, would be of little use to regulators.

Regulations are made to serve a purpose. That purpose should be legitimate, well-founded, explicit and, as far as possible, understood and agreed by those who regulate and those to whom the rules apply. This may seem obvious, but as we'll see below, a lack of clarity about the purpose of regulation is actually a problem.

The purpose of regulation isn't always clear: the development of regulation can be a complex process, involving different parties (and their respective interests) and pursuing multiple (and not always compatible) objectives.

To deal with this, the analysis presented in this report has prioritised one perspective: the main challenge for local and regional governments in the field of mobility is to accelerate the shift towards sustainable, safe and equitable urban mobility - and this is our perspective for analysing the situation.

2.3. Method(s)

We collected input for this report through different methods, including:

- An online survey;
- A series of focused interviews;
- Desk review (of both scientific and grey literature);
- Notes of meetings conducted with different stakeholders in the regular course of POLIS work.

Regarding the **Online Survey**:

- Conducted using Google Forms;
- The questionnaire [1] contained a total of 44 questions, including filters (i.e., no respondent was asked to answer all 44 questions — the maximum would be 33 questions);

[1] The survey questionnaire can be made available upon request via email.

- The survey was disseminated via various POLIS channels to reach the network's membership and beyond (e.g., mailings to members and external guests of the POLIS' Governance and Integration Working Group, InfoPolis newsletter, social media posts on LinkedIn and Twitter, and several targeted additional emails);
- Respondents were informed their answers would be kept confidential and asked for input that reflected the positions of their respective organisations;
- Responses were collected in July 2022, between Friday, 3 July, and Sunday, 26 July (three full weeks);
- A total of 50 responses were received, of which 42 were from distinct local and regional governments (no duplicates were received);
- This is an exploratory survey, conducted to collect basic information and identify issues for further exploration (being based on a convenience sample, its results cannot be extrapolated to represent a wider universe).

Regarding the **Focused Interviews**:

- Conducted via online meetings;
- Followed a semi-structured interview script [2], which included 9 key questions and a variable number of issues to pursue as follow-up questions when deemed appropriate by the interviewer;
- The interviewers (undergraduate and post-graduate students doing internships at POLIS) received basic training before the interviews and further guidance during debriefings and when requested;
- A short list of cities of interest for this study was prepared, and in each of those cities a professional was identified as the main source of information for the respective case study;
- Professionals interviewed were informed that (1) they would be the main source for the case study report, (2) they would only be quoted if they expressly asked to (no interviewee so requested), (3) the interview would be recorded to facilitate analysis, with the recording being deleted within a month after the interview, and (4) we were looking for their own view on matters that the City for which they worked did not provide an official statement;
- A total of 12 interviews were conducted with an equivalent number of cities, distributed by two different periods: July 2022 and February/March 2023;
- All meetings were individual (i.e., there was only one interviewee) and had, in general, a duration of between 45 and 60 minutes;
- After the interview, the interviewer drafted the case study report and submitted it to the interviewee for a review to check for accuracy of the facts and views collected.

[2] The interview script can be made available upon request via email.

3. Putting Things in Perspective

In recent years, shared micromobility has become a hot topic and the focus of endless discussions that often tend to veer toward the details and forget the big picture. And regulation must always start with the big picture.

Before we look at the detailed responses to the survey, let us look at the issues in more detail. Not to avoid, underestimate or downplay the details, but to better understand their relevance.

Let us take a closer look at the reality of regulation, a process that can be easily distorted by bias, that goes beyond written rules and touches on different issues; and the reality of micromobility, namely the changes that are happening under the radar, the strategic role it can play and whether there is life after 'the' referendum.

3.1. Beware of Bias

Policymakers don't work in a vacuum, in a 'neutral' environment where perceptions are accurate, opinions are objective and proposals are strictly 'technical'. Nor do they develop regulations on a clean slate: the road has already been built and often what needs to be regulated is already on the road. Regulations are developed in a context shaped by the habits, interests and expectations of citizens, professionals and policy-makers.

One striking thing about shared micromobility is the attention and passion it generates in the media, social media and local politics. Not bad, given the size of the vehicles involved, but not good, given how unbalanced this attention is often. It's important to understand this bias because it seems to play an underestimated role in regulation. Where does it come from?

Urban mobility has been shaped by a century of car-centric planning and management. Ensuring 'good' flow and 'enough' parking has been a key concern for many transport professionals. But this concern isn't just 'professional'.

Over the same period, the automotive industry has invested heavily in advertising, effectively shaping our attitudes and expectations about what is normal, acceptable and therefore desirable in terms of mobility.

Cars have become much more than a mobility device - they are a cultural artefact, and individual ownership of such an artefact has become a symbol of freedom, status and virility. They occupy the centre of our streets, both literally and figuratively, and their externalities (road hazards, air pollution, public space occupation) have been normalised [3].

It is against this backdrop that shared micromobility is being viewed and discussed by citizens, the media, elected officials and mobility professionals. And that is a problem because these discussions are easily contaminated by a number of biases that are very common in human cognition.

Because of **salience bias**, we tend to pay more attention to what stands out from the ordinary, usually something that is new or unusual. The problem when it comes to policy is that it can lead policymakers to give more weight to what is more salient, but not necessarily (objectively) more important.

A good example of this is how the focus on the risks e-scooters pose to pedestrians has overshadowed the much greater danger posed by motorised traffic. E-scooters do pose risks to pedestrians that need to be addressed, but on any given day there are bound to be more (and many more) pedestrians injured (and killed) by cars than by e-scooters. Effectively addressing this source of danger (e.g. by reducing speed limits and implementing traffic calming measures) remains critical to the safety of everyone, including e-scooter users, and distracting from this priority is very unhelpful.

This salience bias is linked to **status quo bias**: we tend to have a preference for the current state of affairs and an aversion to loss [4]. This results in resistance to change and difficulty accepting new things and the adjustments they require. We tend to focus on their shortcomings and potential damage, and easily become blind to their potential benefits.

This also applies to taking responsibility for doing things differently.

[3] 'Normalisation' refers to social processes through which ideas and actions come to be seen as 'normal' and become taken for granted, and thus accepted, in everyday life.
[4] The psychological pain of losing is much more powerful than the pleasure of gaining. This applies not only to actual events but also to anticipation of outcomes: the tendency to avoid a loss tends to be much stronger than the willingness to run a risk that can produce equivalent gains.

It is difficult to blame and punish someone who maintains the status quo by doing what everyone else is doing, but it is much easier to castigate someone who does something new. In other words, those who step forward to lower speed limits, install cycle lanes and convert car parks into e-scooter corrals run a greater risk (and have a greater fear to overcome) than those who just keep things as they are.

Once we have attached disproportionate importance to something that is new and disproportionate attention to its shortcomings, **confirmation bias** will lead us to pay more attention to what confirms our opinion and to pay less attention to, and underestimate, what doesn't.

These biases are natural and recurrent in human cognition and collective decision-making. They inevitably influence policy-making, and in this context shared micromobility is at a disadvantage: it stands out as new and unusual and requires a reallocation of space. Recognising and understanding this is a necessary first step towards better regulation.

3.2. More than Written Rules

In one of its earliest formulations, in the 15th century, regulation was defined as 'to adjust by rule, method or control'. Regulation is first and foremost a process - a process that can use different tools. It is not enough to 'write' rules. Compliance requires much more. Effective enforcement is needed, and positive incentives to encourage compliance can go a long way. Creating an environment that naturally encourages compliant behaviour goes even further.

From a legal point of view, what we call the 'regulatory framework' is actually a complex combination of legal instruments, ranging from EU directives to national legislation to local regulations, and from transport law to basic rules on the competence of local and regional authorities (e.g. what they can and cannot regulate, who is responsible for what).

However, in order to regulate mobility effectively, local and regional governments need to take a broader view. Firstly, because they're in charge of the 'main regulator': public space. The design of the public realm can encourage, discourage or even prevent behaviour, including the use of transport modes and the operation of mobility services.

With this power comes responsibility: there must be consistency between the stated intentions for a behaviour, the rules that apply to that behaviour, and the physical

environment in which that behaviour takes place. If we allow the environment to enable behaviour that is undesirable or even forbidden, enforcement becomes an uphill battle and serious safety issues arise [5]. The same happens when written rules dictate behaviour that is not supported by the physical environment, for example, when shared e-scooter users are told to 'park properly' but proper parking isn't provided.

Local and regional governments also have a deeper, arguably more powerful power: that of aligning a range of decisions and incentives to fulfil a vision of the desired future for their area. Some of these actions have a fundamental impact on urban mobility: in the longer term, by shaping land use patterns through planning instruments. In the shorter term, by incentivising or at least facilitating the articulation of different mobility services with public transport.

But to use a vision effectively, you need to have a vision in the first place. As the Roman thinker Seneca (5BC-65AD) pointed out more than 2,000 years ago: 'If you do not know which harbour you are sailing into, no wind is favourable'. Having a strategy creates strategic opportunities. Without one, regulatory action becomes reactive and ineffective, advancing no particular purpose.

3.3. Three Different Things

When we discuss the development of written regulations for shared micromobility, what exactly is being regulated? It's important to specify and distinguish between the different 'regulable' issues to ensure that regulations are developed at the right source and apply to the right entities.

With regard to shared micromobility, we can see (at least) three different issues that are recurring in public concerns, policy discussions, position papers and actual regulations.

First, **vehicle requirements**, i.e. technical specifications on the physical characteristics of vehicles. These may include, for example, the number and size of wheels, overall size and weight, engine power, etc. In the European Union, these specifications are commonly defined and used for the type-approval of vehicles for the EU single market and their categorisation for EU roads (with the category corresponding to the national road codes that determine where these vehicles can circulate and park).

[5] An example of this is speeding by motorised vehicles: it's the built environment, not traffic signals, that has a determinant role in speed. If the environment makes car drivers feel comfortable about driving over the speed limit, most will tend to. Neither police enforcement nor civic education will fix that.

While the electrification and diversification of cargo bikes adds complexity to what or how a bicycle is, there are no technical specifications for e-scooters approved at EU level, nor even an agreed procedure for their type approval. To fill this gap, some Member States have started to develop specifications, mainly as a national reference for cities to use.

A second issue is **user behaviour**, i.e. rules on how these vehicles should be used in the public right of way, usually set out in national road codes. These rules may specify, for example, which vehicles are not allowed on motorways, the maximum speed at which they may circulate, where they may or may not be parked, whether the user must wear a helmet, the minimum age for driving a particular category of vehicle, etc.

Driving rules are usually laid down in national highway codes. The novelty of shared micromobility, coupled with some uncertainty about the categorisation of e-scooters (and an expected degree of ignorance on the part of users), seems to have led to a certain leniency towards riding, and especially parking, on pavements. Resentment at the encroachment on the pedestrian network has led some cities to impose specific rules of behaviour for e-scooters, and to task shared micromobility operators with helping to enforce these rules.

Finally, a third, distinct issue is **market access**, i.e. under what conditions and through what process a company can provide a for-profit mobility service. Regional and local governments usually have a regulatory role to play, but this role is often subsidiary, i.e. they can only develop regulations if there is an enabling law at the national level that gives them the power to do so. The same applies to the use of public tenders or concessions as a means of controlling access to the market.

The role of enabling legislation at national level for shared micromobility varies between Member States. In some countries, there was none, and cities had to wait for national legislation before acting, or at least proceed very cautiously; in others, a pre-existing and general jurisdiction over transport and/or public space was sufficient.

In urban mobility, at least, we see several cases where regulation comes after innovation, not before. But that's not all: innovation comes earlier and grows faster in large urban areas, often increasing the gap between national regulation and the reality on the ground.

Faced with rapid change, public outcry and direct responsibility for the public right of way, several local and regional governments have set out to regulate at their level using the tools at their disposal.

This regulatory action has focused both on issues that are and must remain within their scope (e.g. urban space allocation, including parking and its enforcement), and on issues that are usually regulated upstream: in particular, vehicle requirements and user behaviour.

The latter poses challenges for both the regulators and the regulated. For the former, the challenge is to develop comprehensive and effective regulations that are legally sound in a context where service provision and public resentment are influencing policy discussions. For the latter, especially for companies operating in dozens of different markets, the challenge is to participate in policy development in each of these markets while providing a service that meets multiple regulatory requirements.

3.4. Growing under the Radar

Electromobility usually conjures up images of electric cars and charging infrastructure. We tend to forget about Light Electric Vehicles (LEVs) - and yet they are growing in number and variety, and fast.

Electric motors for smaller vehicles are smaller, lighter, cheaper and easier to manufacture and install, and they have driven the 'motorisation' of many things, from bicycles to cargo bikes, e-scooters to skates, one-wheelers to monowheels, and whatever comes next.

Whether or not they are still classified as 'active' mobility, the fact is that these vehicles share many safety challenges and functional needs with cycling. As such, this 'expanding universe' of LEVs needs to be fully considered as we plan for the future and design policies, regulations and infrastructure for the public highway.

But there is more, much more, to consider, because LEVs are also driving a democratisation of electric mobility, particularly e-scooters. Just look at what happened in France in 2021 alone: while the total number of e-scooters deployed by shared micromobility operators in all French cities was less than 40,000, more than 908,000 units were sold to individuals. The following year, an estimated 2.5 million units were owned by individuals across the country [6]. It's not just a question of numbers. Market studies show that e-scooters appeal to socio-economic groups that cannot afford to buy electric bicycles [7] or simply do not have the space to store them

[6] Source: Fédération des Professionnels de la Micro-Mobilité (March 2022).
[7] Source: idem.

safely where they live. It is difficult to climb two flights of stairs with an electric bike, and it is hard to feel comfortable leaving it on the street overnight. The same is not true for an e-scooter [8]. There is arguably a social dimension here that will continue to drive the number of individual e-scooters.

This development poses critical strategic challenges and requires a new, different approach to micromobility. And it raises some tough questions for cities and regions trying to 'get a grip' on shared micromobility. For example:

- The lack of mandatory legal technical specifications for e-scooters is but one question – even if those requirements existed already, how effectively would they cover new types of LEVs? The margin for innovation makes them a fast-moving target.
- With the evolving shapes, sizes and weights of emerging LEVs, where do regulations draw the line between what must be driven on the carriageway and what can be driven on the sidewalk? What about age limits, if we consider, e.g., skates and inline skates? And who is going to check that, i.e., how will enforcement work, if ever?
- What about business innovation? While advances have been made regarding the deployment of shared e-scooter fleets, what if (or, more precisely, what when) new business models appear, e.g., models based on the sharing of individually owned vehicles?
- How effectively can the regulation of operator-owned fleets address problems also caused by a fast-growing traffic of individually-owned e-scooters (for example, riding on sidewalks, speed, robustness of the vehicle)? And how viable is it, in practical terms, to establish (and enforce) rules for shared e-scooters users that are much more demanding than rules applicable to individuals driving their own vehicles?

These and other questions raise important issues for regulation - not least because regulation presupposes viable enforcement. If enforcement cannot overcome practical difficulties (e.g. the sheer number of vehicles versus the resources available to inspect them), or faces perceived unfairness (e.g. different treatment of fundamentally equivalent behaviour), then the rules are simply unsustainable.

This is not to say that regulation of e-scooters is impossible, or that regulation of shared micromobility is hopeless. But the context for regulation has changed radically and will continue to change. Shared micromobility operators may no longer be the sole owners of e-scooters, but they still deploy a critical mass of vehicles and can help shape collective behaviour.

[8] It is important to note, by the way, that this raises important fire safety issues. E-scooter batteries are very different from, e.g., smartphone batteries. Being bigger, they can emit exponentially larger amounts of toxic gas if on fire. Furthermore, they can be frequently subject to shock, vibration and extreme temperatures.

3.5. A Fair Question?

Yes, shared micromobility can provide a valuable alternative for about 50% of all car journeys in the EU that are shorter than 5 km. Yes, active mobility is healthy and has a very low carbon footprint, and walking and cycling must take precedence over an electric alternative for a trip they can cover.

But how realistic is it to expect shared e-scooters to 'absorb' many car journeys on a one-for-one basis, or not to provide an attractive alternative to people walking? Should we judge shared micromobility by the percentage of trips that 'would have been made by car' or 'by walking and cycling'? These questions may sound obvious, but are they strategically useful?

The challenge of modal shift is not about a monomodal shift, i.e. from a preference for one mode to a preference for another. Rather, it is about enabling a menu of mobility options that, taken together, offer users a more attractive alternative to individual car ownership.

The more diverse this 'menu' is, the more versatile it will be, as users will be able to find within it options that better suit their specific needs - for any hour of the day, any day of the week, any week of the year, or any purpose, origin and destination of the trip. And the more versatile this 'menu' is, the more reliable it will be. Once that reliability approaches that of individual car ownership today, affordability becomes an unbeatable argument.

This is the strategic challenge in which shared micromobility has a role to play. It increases diversity and thus enriches this 'multimodal alternative menu'. To reiterate, the key issue is not to capture individual car users with shared e-scooters, but to contribute to the growth of a richer, more effective alternative for the masses. This isn't wishful thinking. An alternative mobility offer requires and benefits from a network effect: the more people use it, the more relevant it becomes; and the more relevant it becomes, the more people will use it.

There is another role for shared micromobility that is also of great strategic importance. A pioneering role in two respects.

Firstly, it enables the new adults entering the mobility market to 'start on the right foot'. After all, getting a driving licence has been a rite of passage into adulthood for generations. Once that became a 'sunk investment', driving became the next logical (and necessary) step. The family car, for starters, and as soon as possible, one of your own.

Well, not anymore - or at least not necessarily. Shared e-scooters offer a faster and cheaper way to access individual motorised mobility (and a safer one, too, when compared to driving a car or motorbike). In a recent policy discussion, someone called shared micromobility 'a gateway drug to shared mobility'. That's one way of putting it...

But shared micromobility has also been an important pioneer in working with local and regional governments. After all, how many other modes of transport or mobility services share data with local authorities? Beyond public transport, very few - and in most cities none. And yet the data exists and is often collected and even sold, including data from individual vehicles.

What about ensuring that vehicles automatically comply with speed and parking regulations? Almost all shared micromobility operators do this through geofencing. The technology they use is basically available to other modes of transport or mobility services. And yet...

3.6. A Killer Referendum?

On 2 April 2023, the City of Paris held a referendum on shared e-scooters. Operations had started in 2018 and the contract, which allowed three companies (Lime, Tier and Dott) to operate around 5,000 e-scooters each, was due to expire on 1 September 2023. Should it be renewed? The voters said no.

Resorting to a referendum is a legitimate, albeit rare, step in deciding on a particular mode of transport. If the referendum is conducted according to proper democratic rules, the results must be respected. Disputing the validity of the results on the basis of abstention rates or the qualifications of the voters for the decision in question are old issues in democracy, and we will not discuss them here.

In terms of perspective, three questions are particularly relevant.

The first sounded obvious immediately after the referendum and landed in the middle of the preparation of this report: is this the end of shared e-scooters? Apparently not. Operations have continued in most cities, in France and beyond, and the UK market is gradually opening up. As far as we know, no similar referendums have been held anywhere else, at least not yet. If shared e-scooters are ever to be wiped off the face of the earth, it will take more than the Paris referendum.

The second question is particularly relevant to Paris: what is the impact of individually owned e-scooters? Will they continue to grow as short-term rentals become impossible?

Or will they decline because potential adopters will not be able to try out shared vehicles? And what is the impact on their regulation? Will it be easier or harder for the City of Paris to manage their use? That remains to be seen.

The third question also emerges from the Paris case, but has a broader relevance. Paris is one of the leading cities in the regulation of shared micromobility. The City has been proactive and, very importantly, has sought to match its intentions with action on the ground. Few, if any, major European cities have done as much as Paris, building many kilometres of cycle lanes, creating thousands of parking spaces for bikes and e-scooters, and also (very importantly) reducing the speed limit in a large area, followed by traffic calming measures. And yet, despite all these efforts, practical problems and public resentment were pressing enough to lead to a referendum. This calls for some caution and careful reflection as we analyse regulatory practice in other cities.

4. Survey of Cities and Regions

This chapter presents the main results of the online survey 'Permission to operate? Regulating Shared Micromobility Services - Census' [9], regarding (only) the input provided by local and regional authorities. This means that a total of 42 respondents indicated that they work for the public sector, of which 28 for a city (local government), 4 for a municipal transport authority or company, 6 for a region or province (regional government) and 4 for a regional transport authority.

As mentioned above, this was an exploratory survey based on a convenience sample [10]. Respondents came from 19 different countries: Austria, Belgium (5), Bulgaria, Denmark, France (2), Germany (6), Greece, Hungary, Ireland, Israel, Italy, the Netherlands (8), Norway (3), Poland, Portugal, Spain (2), Switzerland (3), Turkey and the United Kingdom (2).

There were no cases of two respondents working for the same public organisation. Where two respondents worked for different public authorities with responsibility for an overlapping area (e.g. the city and the regional authority covering the city's area), the responses were compared to ensure that there were no contradictory answers and considered as two individual responses.

Respondents 'knew what they were talking about'. All (N=42) had at least one shared micromobility service operating in their area: 38 had station-based bike-sharing schemes, 21 had free-floating bike-sharing schemes, 23 had free-floating e-scooter schemes and 10 had station-based e-scooter-sharing schemes.

In 24 cases there were only private shared micromobility operators, in 16 cases there were both private and public operators, and in only 2 cases was the service exclusively public (in both cases station-based bike sharing).

[9] For details regarding the method, please cf. section 2.3.
[10] As such, the results do not allow for statistically valid extrapolations.

4.1. Responsibilities

What are the responsibilities of local and regional authorities regarding, specifically, shared micromobility services? Respondents were provided with a list of responsibilities, and asked to indicate all that applied to their own organisation (N=42).

Main results:

- The most frequent responsibilities are **'developing regulations'** and **'monitoring'**, both indicated by almost 3 out of 4 respondents;
- The next most frequent responsibilities were **'improving street infrastructure', 'enforcing legal rules'** and '**collecting and managing data**', all indicated by over half the respondents;
- **'Addressing through transport planning'** and **'controlling access to the market'** were indicated by around one-third of the respondents.
- **Responsibilities are quite present** – only 5 respondents indicated having no specific responsibilities for shared micromobility.

What are the responsibilities of your public organisation in relation, specifically, to shared micromobility services?

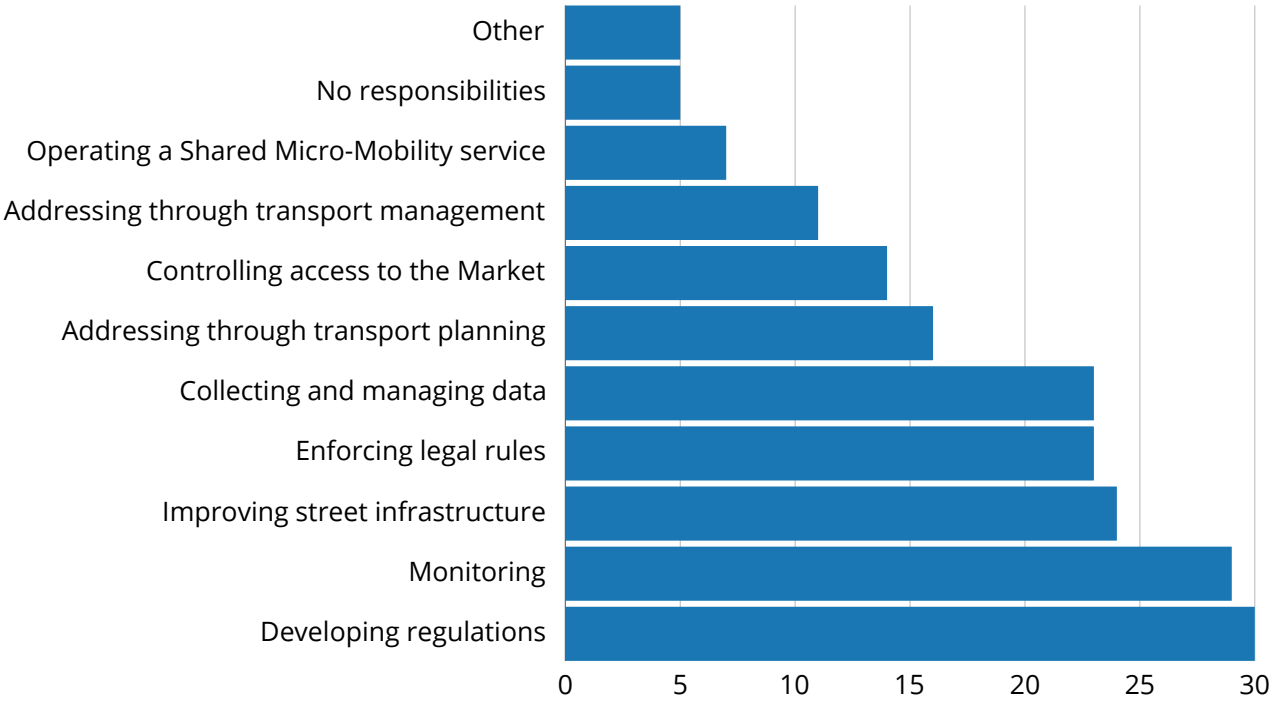


Figure 2. Share of respondents indicating listed activities among their scope of responsibilities, multiple choice question, N=42

Some of these responsibilities do not go far when standing alone. Thus, a detailed analysis on some pairings provides relevant insights:

Developing regulations

Around two-thirds of the 30 respondents that hold this responsibility are also responsible for 'enforcing legal rules' (22) and 'improving street infrastructure' (21). This also means that almost one-third of those who develop regulations lack two basic tools to implement them

Collecting and Managing Data

Of the 22 respondents who hold this responsibility, only half combine it with 'transport planning' (11) and even less, a third, with 'transport management' (8). On the other hand, two-thirds can also use it to 'improve street infrastructure' (16)

Addressing through-transport planning

Of the 16 respondents who hold this responsibility, about two-thirds can also follow up with 'street infrastructure' (11) and 'transport management' (10), and only about a half can also 'control access to the market' (9)

Controlling access to the market

Of the 14 respondents who hold this responsibility, almost all 'collect and manage data' (12), and less than one-third also operate a shared micromobility service (4)

4.2. Organisational Structure

Are these responsibilities matched by a dedicated organisational structure, e.g., a department or a team? In most cases yes, but not in all.

Of the 37 authorities with responsibilities, almost three-quarters (27) indicated having a dedicated team or some other type of concrete arrangement (e.g., a part-time team, or a shared mobility manager working on a cross-functional basis with other teams).

Do you have a dedicated department or team that deals with shared micromobility?

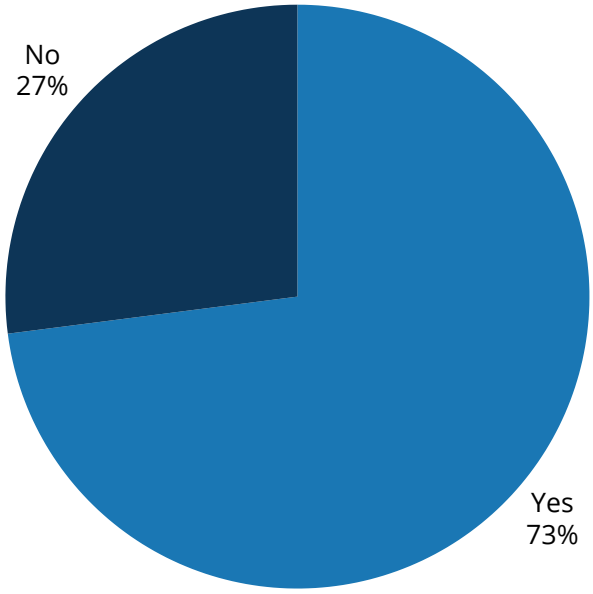


Figure 3. Share of authorities with responsibilities indicating having a dedicated shared micromobility department or team, N=37

A total of 10 authorities hold responsibilities but have no dedicated organisational structure. This naturally raises the question of knowing how effective they can be (or become) in fulfilling their responsibilities in transport planning (which 4 of them hold), developing regulations (7), controlling access to the market (4), collecting and managing data (5), enforcing legal rules (6) and improving street infrastructure (4).

Unsurprisingly, all authorities that indicated having no responsibility also indicated having no dedicated team. While this is understandable, in the long run, considering the fast-changing nature of the industry, we wonder how prepared these authorities will be to monitor, understand, and deal with any developments that may emerge.

4.3. Regulating Why, and How?

Of the 42 responding authorities, over three-quarters had implemented regulations for shared micromobility when the survey was conducted. What drove them (N=33) to do it?

Main results:

- **'Difficulties with shared micromobility'** was the most frequent answer;
- **Pre-existing laws**, whether national or local, were less mentioned, but are nevertheless important as they account for almost a third to a half, respectively, of all cases;
- In any case, the 'difficulties' were enough by themselves in 13 cases (i.e., there were no national or local pre-existing laws 'asking' for regulation of shared micromobility);
- Other motives alone were an exception (2 cases only): 'to make shared mobility work better' and 'to guarantee order'.

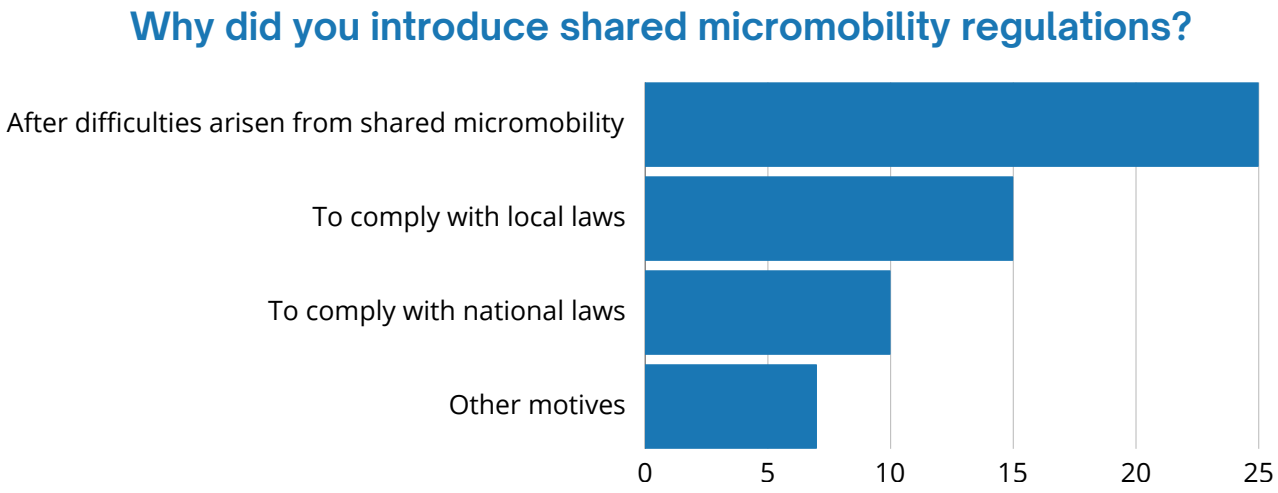


Figure 4. Share of respondents indicating reasons for introducing shared micromobility regulations, multiple choice question, N=33

As for the 'how', what is the preferred approach: hard or soft regulations?

- The difference between the two is that the former are legally binding, while the latter are not, and rely on the effective influence and self-interest of the parties;
- The most frequent approach is clearly the combined one — of all responding authorities that implemented regulations (N=33), more than half (19) use both hard and soft regulations. Use of exclusively hard (8 cases) or soft regulations (6) is much less frequent.

On the specific kind of regulations, respondents were asked about the use of 'legal obligations' (binding laws and regulations), 'guidelines' (non-binding if standing alone), 'self-binding agreements' (e.g., contracts) and 'information exchange' (the existence of specific arrangements for that effect).

Main results:

- **Legal obligations were the most frequent answer**, followed by guidelines, arrangements for information exchange, and self-binding agreements;
- The combined approach mentioned above is also reflected at this level: **more than two-thirds of the respondents (23) use more than one kind of regulation**, with more than one-third using three or four kinds;
- In over half the cases where legal obligations are used, they are not used alone, being combined with guidelines (in 17 cases) or arrangements for information exchange (14);
- Where legal obligations are not used (8), arrangements for information exchange are absent.

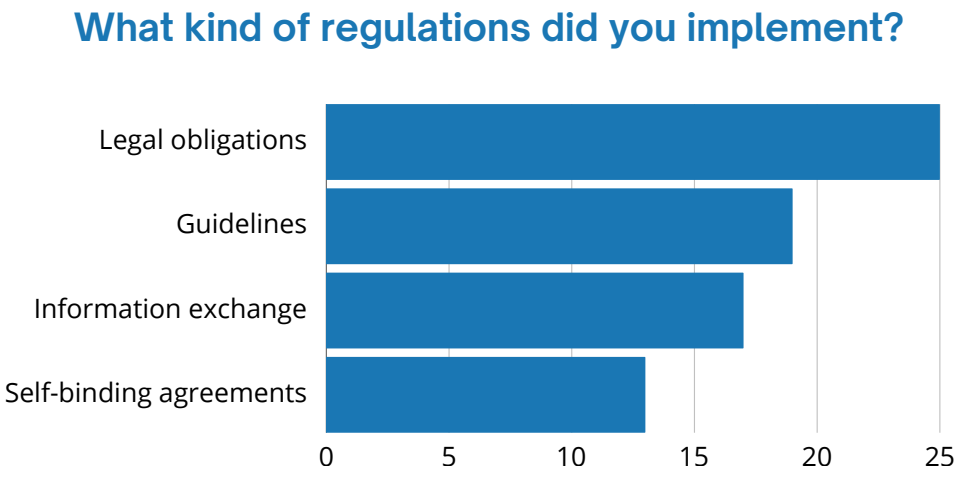


Figure 5. Share of respondents indicating listed activities among their scope of responsibilities, multiple choice question, N=42

4.4. Regulating What?

Regulation can be pursued on different fronts. POLIS' discussion paper 'Macromanaging Micromobility' (2019) articulated several 'regulatable' domains. A questionnaire covering all of those domains would be too extensive for a survey. Thus, we prioritised four specific domains for inquiry:

Rules on operations 1

A shared micromobility service combines many different operations. Along with their light rideable vehicles, operators are also deploying digital applications and payment methods, and a host of other resources, some of which belong to them, and some of which are contracted out (the charging of batteries and or the redeployment of vehicles).

Consumer protection 2

Citizens expect legitimate businesses to have legitimate and proper business practices. Public organisations have the right to expect and verify that shared micromobility operators are trustworthy and dependable and do not discriminate negatively against any group.

Collection and management of data 3

Shared micromobility operations generate high volumes of data about the number, spatial distribution, and status of their vehicles, but also about who is using them, to travel where, and when. These data can be helpful for various transport-related activities, from planning to management, research, and enforcement. Their collection, sharing and management also poses privacy risks.

Improvement of infrastructure 4

The safe use and sustainable growth of shared micromobility requires the provision of proper conditions to accommodate safe circulation and orderly parking.

On which domains are you regulating shared micromobility services?

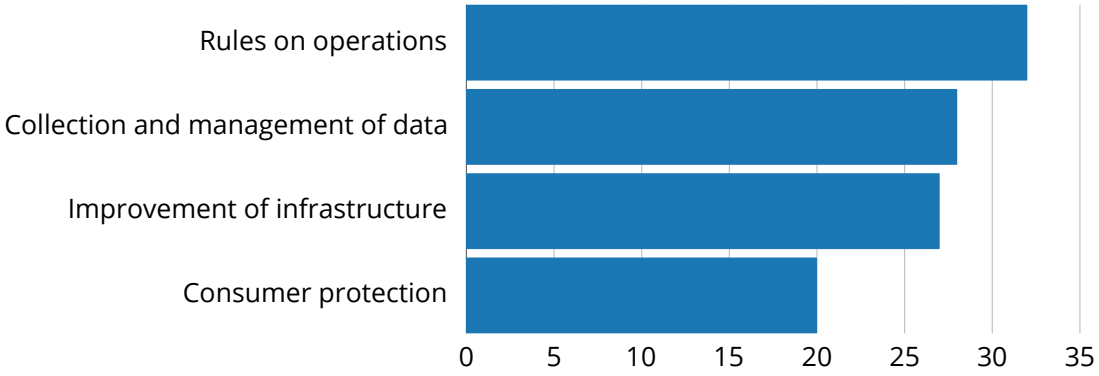


Figure 6. Areas of micromobility services regulated by cities, multiple choice question, N=32 (cities that introduced regulations)

These four domains were being considered by most of the responding authorities regulating shared micromobility through hard and/or soft measures (N=33).

Only consumer protection is considered by (slightly) less than two-thirds of the respondents. In the following sections, we present more detailed results for each of these domains.

4.5. Rules on operations

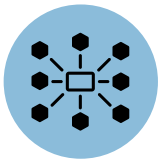
Operations was the first domain considered. Of the 33 responding authorities that were regulating shared micromobility, all except one were regulating operations. The items indicated for rules targeting operations were listed and described to respondents as follows:

Limit the number of operators

Only a certain number of operators can offer their services

Limit the size of the fleet

Operators can deploy only a certain number of vehicles; this limit can be set for each operator, but also for specific areas of the city, and limits can set maximum numbers but also a minimum number of vehicles



Rebalancing & fleet redistribution

Operators must regularly monitor their fleet deployment against pre-set parameters, and move their vehicles accordingly to ensure compliance with set fleet sizes, and avoid cluttering or underserving in certain areas

Geofencing for service limitations

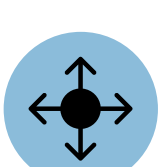
The public organisation defines specific areas where devices are not allowed to park, where they have to circulate at lower speeds, or where they can't even circulate at all; these limits are set into digital maps (geofencing) with which the apps communicate to prevent these actions from happening

Parking guidelines and areas

Guidelines to achieve proper parking on sidewalks, e.g., specific parking areas requiring the user to send a photo of the parked vehicle after use

Dockless-to-docked and hybrid schemes

In specific areas, public organisations can require docking as well as hybrid schemes which limit free-floating in designated parking zones, especially in denser areas or in places where higher pedestrian flows may be seriously harmed by dockless vehicles



Removal or repositioning of vehicles

Operators are urged to pick up improperly parked vehicles damaged or left in inaccessible areas

Speed limitation

The adjustment of vehicles in a way that the vehicles do not exceed a specific speed limit

Insurance

Operators are required to have an insurance that covers damages by their users and vehicles to the city's public space, as well as to other users of the street (pedestrians, cars)

Vehicle specifications and maintenance

Requirements on vehicle characteristics that are relevant for their safety and functionality (e.g., robustness, size of wheels, batteries) and on maintenance and inspection schedules (including, e.g., repair, safe battery handling practices, and qualified personnel)

End of operations

Instructions that must be fulfilled by the operator in case it decides to terminate operations in the city, e.g., removal of all the vehicles, and proper waste disposal

Limits on operating hours

Micromobility services can only operate during a specified time

Weight limits

Shared micromobility vehicles cannot exceed a certain weight

Of the responding authorities with rules on operations (N=32):

- **More than two-thirds** have implemented rules on geofencing (26), parking (25), removal or repositioning of vehicles (25), fleet size limits (24) and fleet rebalancing and redistribution (22);
- **Around half limit the number of operators** (17), demand insurance (17), limit speed (16), specify conditions for vehicles and their maintenance (15) and have instructions for the end of operations (15);
- **A much smaller portion of the respondents**, less than a third, have dockless to docked or hybrid schemes (7), limit the operating hours (6) or impose weight limits on vehicles (3).

Which regulations have you implemented targeting operations in shared micromobility?

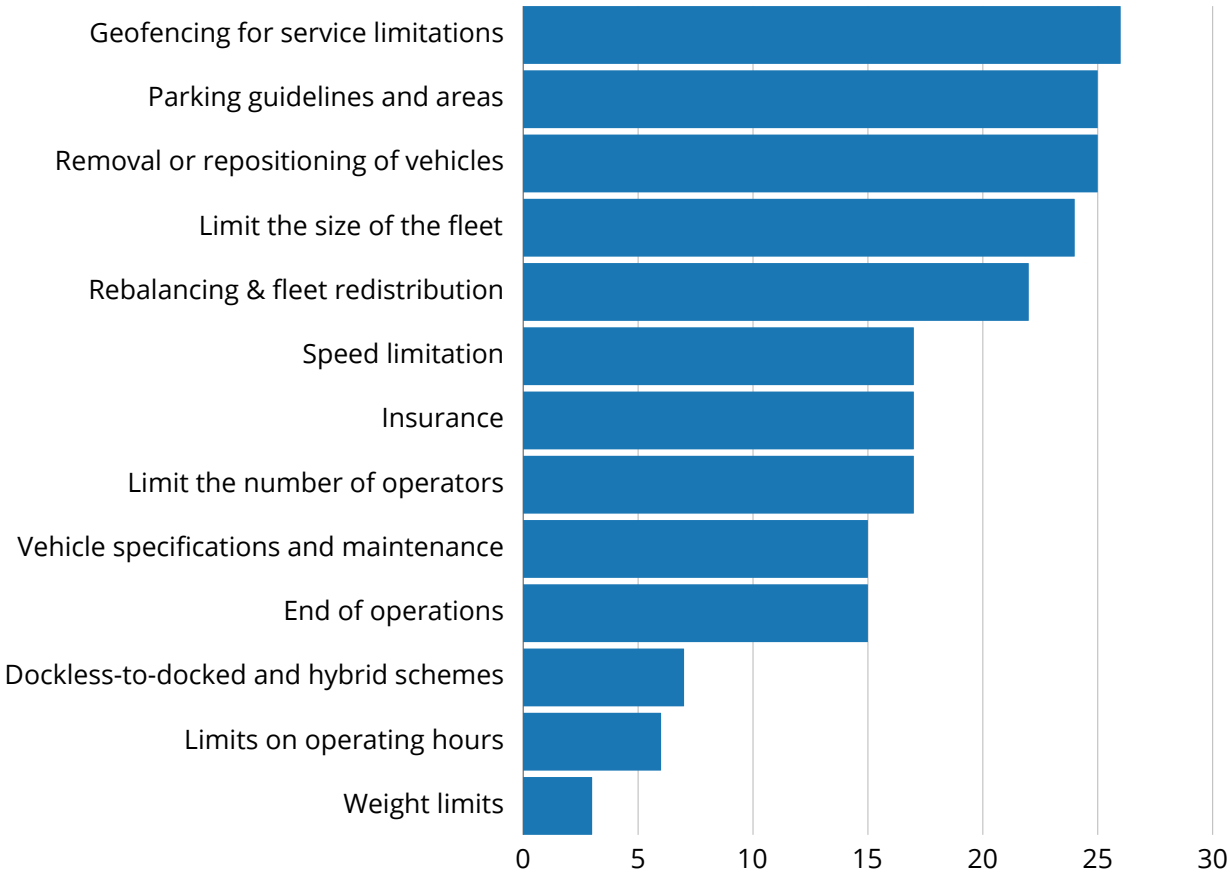


Figure 7. Share of respondents indicating implemented regulations targeting operations in shared micromobility, multiple choice question, N=32

A paired analysis of some of the variables provides some useful insights:

- **Geofencing** is present in almost all cases where there are rules on speed limitation (16 out of 17 cases), rebalancing and fleet redistribution (19 out of 22), and parking guidelines and areas (20 out of 25);
- Almost all authorities with regulations have some kind of rule for **vehicle parking** (31 out of 33), and 'parking guidelines and areas' are often combined with obligations on 'removal on repositioning of vehicles' (19 cases have both);
- Around two-thirds of authorities with regulations (21 out of 33) combine limits on **fleet size** with rules for **rebalancing** and fleet redistribution;
- While around half of the authorities mention (separately) insurance (17), speed limitation (16) and vehicle specifications and maintenance (16), only a much smaller portion (7) regulate on all these items at the same time.

4.6. Consumer Protection

Of the 33 responding authorities that were regulating shared micromobility, around two-thirds (20) indicated some form of regulation in the domain of consumer protection.

Being aware that, in some cities, tourists may represent a relevant part of the users, we opted to focus the attention of the respondents on the local users, asking 'Have you implemented regulations intending to protect local customers?'. The items indicated were listed and described to respondents as follows:

Pricing

Operators are required to a certain price stability during operation, thus preventing price hikes due to peak demands or to sudden changes in management policy

Non-discrimination by phone or payment

Alternative solutions must be available for people who don't have smartphones (and cannot use the app) or who don't have debit or credit cards and need to resort to other means of payment

Outreach and education

The implementation of campaigns by the operators that can be aimed at users for safe and civil behaviours (where and how to ride, speed, helmet use, proper parking, etc.) and at prospective users (mainly to make sure lower-income citizens feel welcome and supported in using shared micromobility services)

Social fares

A system of lower fares to prevent lower-income citizens from being left out by shared micromobility services

Customer service

The establishment by the operator of proper customer support service, including a local point for face-to-face contact and clear and well-publicised procedures and contacts

Non-discrimination of users with disabilities

The inclusion of adapted vehicles (e.g., tricycles, hand-pedalled or recumbent bikes, etc.) and special procedures for reserving and accessing these vehicles

Non-discrimination by language

Operators are required to a certain price stability during operation, thus preventing price hikes due to peak demands or to sudden changes in management policy

Age limits

Users under a specific age limit cannot use shared micromobility

Protective clothing

Users must wear protective gear (e.g., helmets, reflective clothing)

Of the responding authorities with rules on consumer protection (N=20):

- Not one has rules in place to prevent the discrimination of persons with disabilities (a topic that remains a subject of attention in the U.S. [11], and for some operators [12]), and only a small minority (2) has rules to prevent discrimination by phone or payment, thus not pushing shared micromobility operators to look for ways of making their services more inclusive, a known path to improving usability for all users;
- Around half require operators to do 'outreach and education' (the most frequent response, indicated by 13) have a 'customer service' (12), or impose age limits (10);
- Around one-fourth regulate 'social fares' (6), 'pricing' (5), 'non-discrimination by language' (5) and 'protective clothing' (4).

[11] Kiran Herbert, NYC Wants to Get Adaptive Mobility Right, betterbikeshare.org (2022)
[12] VOI, Disability Inclusion Charter for Micromobility - specifically, e-scooters. Version V3.1 (2022)

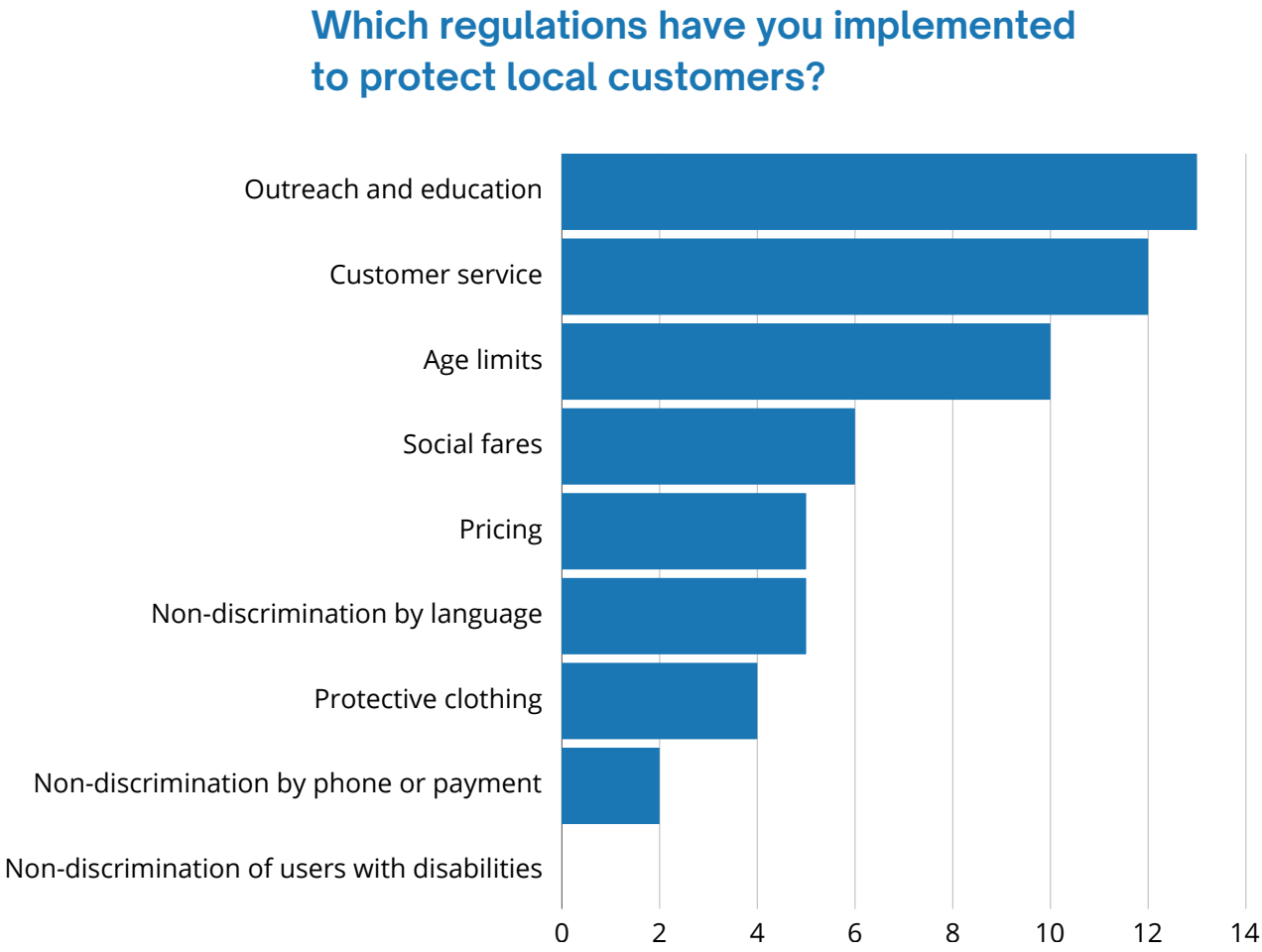


Figure 8. Share of respondents indicating implemented regulations to protect local customers, multiple choice question, N=20

The paired analysis of measures has some surprises (although we must underline the limited size and nature of this survey sample, these two points seem to deserve further exploration):

- One would expect 'social fares' to be always combined with rules on pricing, but that is not the case (it only happens in 2 out of 6 cases);
- One would expect 'social fares' to be always combined with rules on non-discrimination by phone or payment, but that is also not the case (it only happens in 1 out of 6 cases).

4.7. Collection and Management of Data

Of the responding authorities that were regulating shared micromobility (N=33), only 5 did not indicate any measure for collection and management of data.

Considering this domain has been explored in much detail by a previous POLIS survey [13], on this occasion we checked a limited and simplified set of issues, listing and describing them as follows:

Data infrastructure

The public organisation implements resources to collect, store, analyse, monitor, manage, and use databases

Specifications on the format or content of the data

Specifications are provided by the public organisation on the content and the format of the data

Sharing clause

The operator is required to include, in the contractual conditions it submits to users for approval, specific provisions that will not block the operator from sharing anonymised data with the City nor from allowing the City to perform inspections that necessarily imply personal data primarily on consumer rights and service safety

Of the responding authorities with action on data collection and management (N=28):

- The vast majority (24) have implemented (or were implementing) data infrastructure, and over two-thirds (20) provide specifications on data content and format;
- Only one-third (10) require the operator to present a sharing clause to its users (we cannot discern, from the responses, if that is a deliberate option, an omission, or just because such a clause is deemed legally unnecessary).

Which regulations have you implemented to collect and manage data?

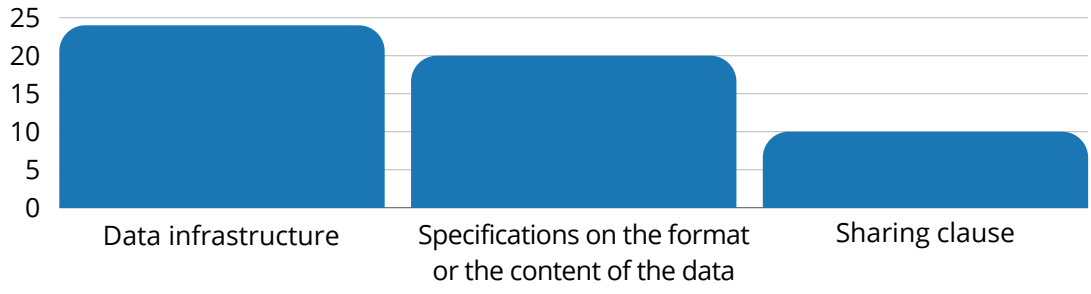


Figure 9. Share of respondents indicating which regulations they have implemented to collect and manage data, multiple choice question, N=28

[13] 'Sharing Data for Shared Micromobility' (2021), https://www.polisnetwork.eu/document/sharing-data-from-shared-micromobility/

A paired analysis reveals:

- Of the authorities specifying content and format of data (20), not all have data infrastructure in place (17 do, 3 do not);
- Of the authorities requiring the operator to present a sharing clause to users (10), not all are also providing specifications on format and content (7).

4.8. Improvement of Infrastructure

The built environment generates patterns of behaviour. It is not enough to prescribe (by law or education) a desired behaviour. If the setting is not supportive of that behaviour, it will occur with low frequency, or even not at all. For the same reason, there is not much that 'awareness' campaigns can do to counter an undesired behaviour that is enabled (and may be even encouraged) by the physical environment. This applies, naturally, to shared micromobility parking and circulation. Yes, chaotic parking on the sidewalks is a major problem – but without designated, clearly marked and sufficient parking, 'education of users' is not an efficient approach. The same goes for the riding of e-scooters on sidewalks – it is very hard to effectively prevent it if users do not feel safe riding on the carriageway.

The infrastructure is, therefore, a regulating tool. It regulates behaviour. The question is whether it is being used deliberately by regulators to foster desired behaviour – or if it is kept in a situation that, unwittingly, fosters undesired behaviour and undermines public policy.

The survey asked authorities about deliberate efforts to improve the infrastructure. Specific improvements that shared micromobility needs in order to operate safely and adequately. Three items were prioritised, and described to the respondents as follows:

Traffic calming to enable users of bicycles and e-scooters to ride in the same space as cars

The public organisation can introduce traffic calming measures to reduce car speeds and increase safety for all street users — reductions in the speed and volume of cars enables users of shared micromobility to safely ride in the same space as cars

Cycleways

The implementation of segregated cycleways where bicycles (electric or not) and other light rideable vehicles are allowed to circulate, provided they do not exceed adequate speed limits

Dedicated parking

Creation of mobility corrals or bike hot spots — often former car parking slots converted (through paint, signage, and bike racks) into spaces for bikes and light rideable vehicles

Of the responding authorities acting on the improvement of infrastructure (N=27):

- Three-quarters had created (or were creating) dedicated parking (21), over a half had cycleways (16) and only around a third (10) were calming traffic;
- The building of cycleways seems to take precedence over two other actions that are complementary but also indispensable: only two-thirds of the authorities building cycleways are also calming traffic (10 out of 16) or creating dedicated parking (also 10 out of 16).

Which measures have you implemented to improve infrastructure for shared micromobility?

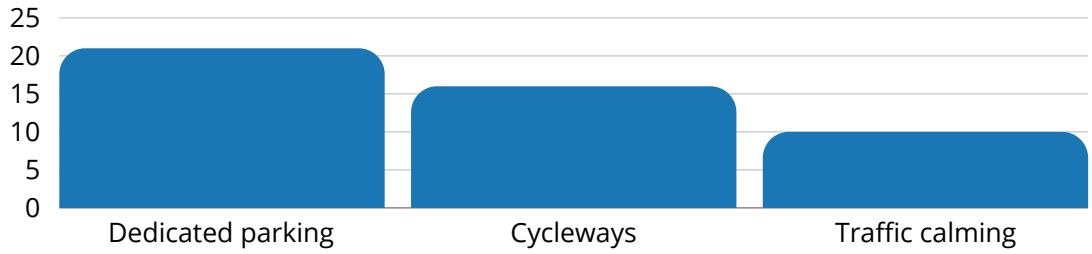


Figure 10. Share of respondents indicating which measures they have implemented to improve infrastructure for shared micromobility, multiple choice question, N=27

If we take a wider look at all the responding authorities that had [14] at least one shared micromobility service operating in their respective area (N=42), the numbers mentioned above gain a different perspective. Are cities changing to accommodate shared micromobility services? Not much, apparently. This, naturally, is detrimental to the safety of users, and to the regulation of this mode.

4.9. Enforcement

After inquiring about the rules, the survey investigated the means of enforcement. The initial question was broad, while the subsequent one delved into specific tools.

[14] This online survey was conducted during the month of July 2022

All respondents from authorities with regulations in place (N=33) were asked 'Do you have the means to enforce these regulations?', eliciting an assessment that is of a more subjective nature.

- Over two-thirds said 'Yes' (23), and around a sixth said either 'I do not know' (6) or 'No' (4);
- Curiously, all respondents who answered negatively (4), mentioned some enforcement tools in the following question, which (probably) means they have tools, but consider them insufficient [15].

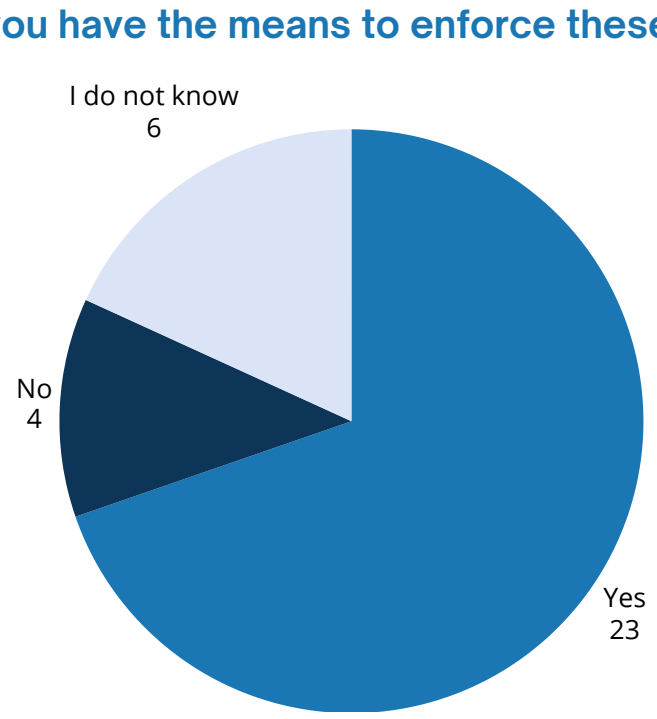


Figure 11. Share of respondents indicating if they have or have not, to the best of their knowledge, the means to enforce regulations, N=33

Enforcement tools were listed and described to respondents as follows:

Operational stakeholder meetings

Regular meetings involving key stakeholders in shared micromobility, including all operators and City services (e.g., traffic and public space departments), public mobility authorities and/or companies, and law enforcement for traffic code violations

Warning letters

Formal written warnings to the operator for non-compliance with one or more requirements, preferably also setting a deadline for the operator to either comply or (in more complex cases) propose measures for compliance

[15] The same applies to a respondent who answered 'I do not know'

Impounding

A public organisation enforcing power seizes and takes legal custody of vehicles because they are improperly parked (they block pedestrian traffic, constitute a tripping hazard, disrespect parking zones, etc.) or may cause other types of problems (vandalism, damaged batteries with electrocution or fire risk, etc.)

Fines

Fines are being issued to operators for improperly parked vehicles

Revocation of operation permits

Suspension of permits or licenses previously issued to the operator

Of the 33 authorities with regulations in place, most indicated having the possibility of using one or more enforcement tools. Analysis of these respondents (N=28) indicates:

- Operational stakeholder meetings are the most frequent tool (24), with all other tools indicated by only half, warning letters (14), revocation of permits (14), fines (13) and impounding (13);
- Very few respondents (only 3) ticked all the listed enforcement tools;
- Operational stakeholder meetings are rarely the only regulating tool (only in 5 cases out of 28), around one-third of respondents combine them with warning letters, fines or revocation (for each of these, 11 out of 28), or impounding (10 out of 28);
- Neither fines nor impounding are universal tools, as more than half the respondents have neither (16 out of 28), and while a third of the respondents (9 out of 28) combines fines with impounding, a similar portion have either fines alone, or impounding alone (4 each).

What tools can you use to enforce the implemented regulations?

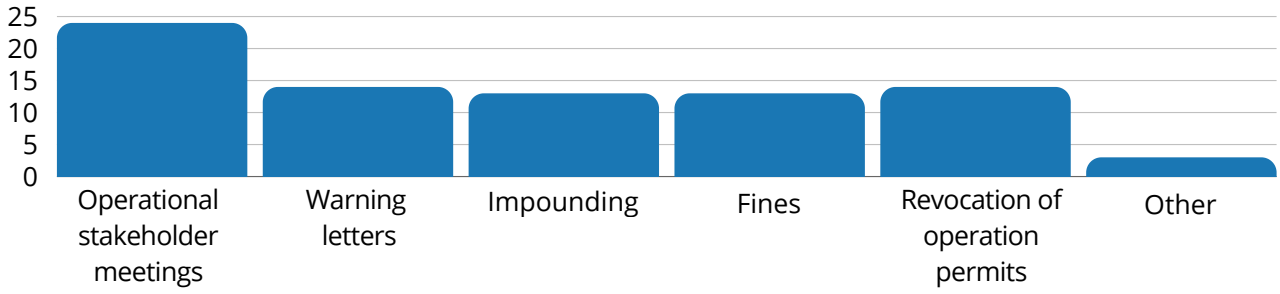


Figure 12. Share of respondents indicating which tools they use to enforce the implemented regulations, multiple choice question, N=28

Further paired analysis between tools for enforcement and improvement of infrastructure shows that, of all responding authorities with shared micromobility services operating in their territory (N=42), only one-sixth has a promising combination of dedicated parking and impounding (7 out of 42).

Less than that may set things up for e-scooter chaos: if the authority can impound but has no designated parking areas (6), or if it has those areas, but doesn't have the power to impound (14), and worst, if it has neither designated parking nor power to impound (6 out of 42).

4.10. Incentives

Public organisations can use incentives to encourage shared micromobility operators to comply with specific regulations and make these services, as an alternative to individual car use, more accessible to potential customers.

Responding public authorities were asked if they were currently providing incentives, about the type of incentives, and, finally, they they were planning to introduce incentives. Two specific types of incentives were mentioned to respondents:

Subsidised fees

A financial contribution of the city to the service provider, in order to reduce the charge to the user, thus empowering an economically disadvantaged part of the population to use the service or attract service to certain areas (e.g., suburbs)

Nudging fees

These can be applied as a cost to the operator, to distribute the service more evenly over the city (e.g., by making the use of public space billable in certain areas), or as a financial contribution to the user, to encourage the use of the alternative means of transport

What is the state of play?

- Of all responding authorities with shared micromobility services operating in their territory (N=42), well over half were not providing any incentives (23), around one-third (14) were providing incentives (and 5 respondents didn't know);
- Of the 14 providing incentives, 10 are providing incentives to make shared micromobility services accessible to the suburbs to cover the first/last mile, but 22 are not;

- Are incentives an alternative to regulations? Apparently not for these respondents: of those providing incentives (14), only 2 did not have regulations in place;
- Subsidised fees seem to be the preferred type of incentive (indicated by 8 out of 14 respondents), with much fewer (4) indicating nudging fees; a combination of subsidising and nudging fees seems to be rare, with only 3 out of 14 indicating that practice.

Are you currently providing incentives to use shared micromobility in order to offer alternatives to individual motorised vehicles?

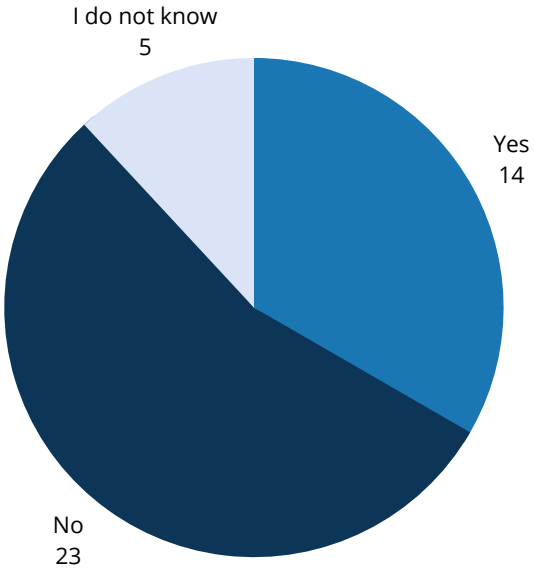


Figure 13. Share of respondents indicating if they are currently providing incentives to use shared micromobility in order to offer alternatives to individual motorised vehicles, N=42

Are you providing incentives to make shared micromobility services accessible to the suburbs to fill the first/last mile gap?

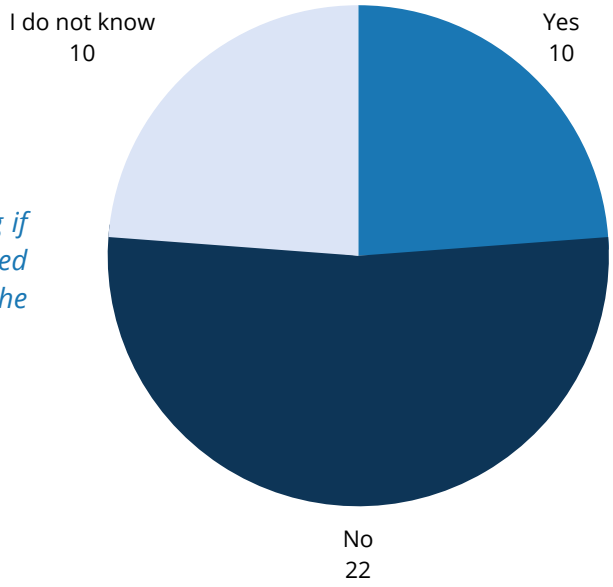


Figure 14. Share of respondents indicating if they are providing incentives to make shared micromobility services accessible to the suburbs to fill the first/last mile gap, N=42

What about the future – 'Are you planning to introduce incentives'?

- Of all responding authorities with shared micromobility services operating in their territory (N=42), over a third said no (17) or did not know (15), and only 10 said yes;
- Of the 10 respondents who are planning to introduce incentives, half already have some kind of incentive in place (5), and the other half do not;
- Of the 28 respondents without any incentives, more than half aren't planning on introducing them either (16).

Are you planning to introduce incentives?

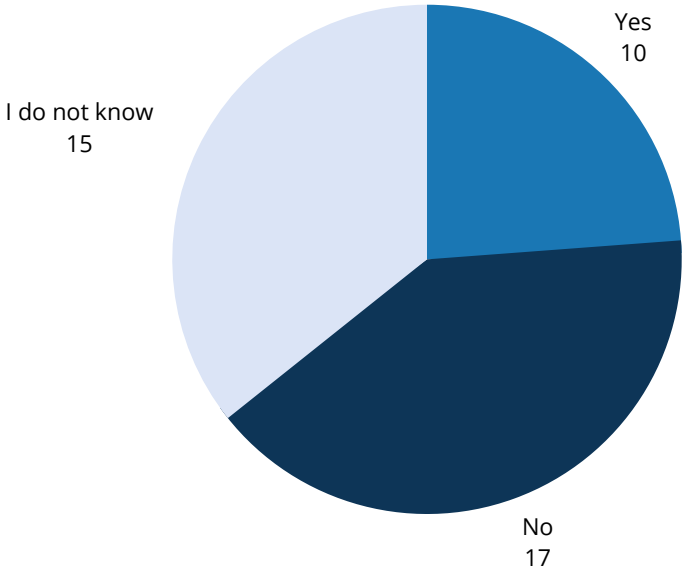


Figure 15. Share of respondents indicating if they are planning to introduce incentives, N=42

5. Case Studies

Let us now look at a number of specific cases - twelve European cities from ten different countries. Why have we chosen these cities? It is simple. We wanted a diverse 'menu': they are cities of different sizes, with different histories and different approaches to shared micromobility.

Of course, you will notice that not everything is different. Many challenges are shared, as are some solutions. But the way these challenges unfold and are addressed seems to be very context-specific. The regulation of urban mobility is a politically charged process and its sensitivity to local dynamics is obvious and natural (what happens on the streets, how public opinion reacts to it, how elected officials discuss it among themselves and with their citizens, what options are available, etc.).

This highlights two things.

First, the importance of looking at local specificities before extrapolating from one setting to another. If Paris decides to ban e-scooters, will other cities do the same? Apparently not. If one city integrates shared micromobility into its MaaS app, will other cities rush to do the same? Not necessarily. Second, the importance of dialogue as a channel for knowledge transfer - both between cities (often across member state borders) and between cities and operators. This is what POLIS has been doing, namely through the POLIS Governance & Integration Working Group.

As explained earlier (see section 2.3 for the methodology), the preparation of these case studies involved focused interviews with key sources and extensive desk research. All of this took place over a period of one year - we have done our best to keep the cases up to date, but of course, it is possible that some changes in some of these cities are not reflected in these cases.

It would have been difficult to obtain 'official' positions from some of these rather large organisations, especially as this is a complex and dynamic issue with a (sometimes not insignificant) degree of political sensitivity. Please note, therefore, that these are not 'official' accounts - we asked our sources for personal opinions and assessments in the context of these interviews. And while we have asked some sources to review these case studies, this review is for accuracy and does not imply official endorsement or approval by the cities.

5.1. Antwerp, Belgium

Shared micromobility arrived in Antwerp in 2018. Recognising the potential challenges, the City promptly introduced regulations for these transport services. By 2021, the city had already revisited and revised its regulations twice. Among these stipulations was the allocation of only 30% of any provider's fleet inside the historical centre, to maintain its appearance and reduce nuisance.

As the micromobility landscape evolved, so did the challenges. To ensure compliance with these regulations, Antwerp innovatively introduced a penalty points system. Financial penalties were initially considered but met with legal barriers. Consequently, the city resorted to two main penalties: revoking the provider's license or mandating the reduction of their fleet in the city for a specified duration. The penalty points system associated specific breaches of regulations with a predetermined number of penalty points. Regular evaluations every three months determined the sanctions, if any, that a provider would face based on their accumulated penalty points.

In its beginnings, the system went soft on the providers, which had an extension to familiarise themselves with the requirements, facilitated by a monitoring dashboard developed by the City. Any discrepancies observed by the City officials in a provider's operations would be communicated, allowing for corrective measures. As providers became accustomed, the City tightened its grip, ensuring stringent adherence to the regulations.

A pivotal aspect of this regulatory framework is the demand for high-quality data from providers. This is key for monitoring compliance. However, some providers are facing challenges in providing automated data, leading to penalty points. For most providers, the development of this system was well-received. Many appreciated the clarity and structure, ensuring a level playing field, although acknowledging the complexities and costs associated with compliance.

Antwerp's shared micromobility landscape has been dynamic. From a widely used and well-functioning docked public bike service to a shared e-bike system throughout the City-Region relying on physical and virtual hubs, the city has seen various models. Furthermore, the shared e-moped sector has also experienced shifts, with many providers exiting due to competition and financial challenges. Currently, three e-scooter services operate in the city, with a fleet totalling nearly 2,900 e-scooters. These e-scooters have become increasingly popular, recording over two million trips in a year.

To enhance control and ensure safety, the City introduced 'no-go zones' and 'no park zones' in specific areas. Drop zones in the historical centre are also being expanded, with an ambitious goal to make the entire area a no-park zone.

The City's data dashboard has been a cornerstone in managing these services. Although there have been challenges with data discrepancies, the dashboard remains an indispensable tool. This innovative tool displayed real-time data, allowing officials to meticulously monitor compliance with various regulations and providing real-time information on the availability of vehicles to users through Antwerp's MaaS 'Slim naar Antwerpen' ('Smart Ways to Antwerp').

The dashboard also facilitated seamless communication between the City and shared micromobility providers. If City officials spotted any discrepancies or non-compliance, providers would be alerted in real-time, enabling swift corrective actions. This not only fostered a transparent relationship but also ensured that providers had a clear understanding of where they stood in terms of compliance.

This data-driven approach, however, was not devoid of challenges. While the City's infrastructure for data collection and management was robust, some providers struggled with ensuring the accuracy of the automated data they supplied. A central issue is the poor GPS accuracy of some of the current provider's vehicles, which can reach up to 25 meters of error. This inaccuracy creates issues when users leave vehicles outside of designated drop zones or in front of private property or public infrastructure like crosswalks or pedestrian paths. In upcoming negotiations with potential providers for 2024, therefore, the importance of improved GPS accuracy will be an issue to raise.

Figure 16. Antwerp, BE, 17/04/2020, E-scooters at drop zone in Antwerp Shutterstock: Farantsa

Engagement with both providers and citizens remains a priority for the City. For providers, there are regular meetings to address concerns and ensure alignment with city regulations. On the other hand, the citizens have an automated complaint form to report any anomalies they observe, allowing for real-time rectification by the providers.

Overall, Antwerp's approach to shared micromobility highlights the delicate balance between innovation, urban planning, and public safety.

As the City continues its journey in this domain, it underscores the importance of adaptability and proactive measures in managing urban landscapes. City officials point out the importance of studying what other cities with longer-standing regulations for shared mobility are doing, considering their methods and experiences can provide invaluable insights to help new cities navigate potential challenges.

Unlike other countries and cities, which opted for a preventive approach, Antwerp chose a 'learning by doing' approach. This means embracing new challenges, innovating solutions on the go, and adjusting based on real-world feedback. As the landscape of shared mobility evolves, cities should be ready to adapt their policies based on the experiences of both early adopters and their unique challenges.

5.2. Berlin, Germany

The State of Berlin (Bundesland) is in the process of introducing a new regulatory framework, the 'Berliner Straßengesetz'. Enforcement of these rules will be a task for all of Berlin's 12 districts, which are responsible for public space in their areas, including managing sidewalks and parking lots.

As a first step, the Berlin Road Act was amended in August 2021, to deal with uncontrolled growth and conflicts of use, two factors driving a familiar problem, i.e. shared e-scooters and bicycles from rental companies often blocking sidewalks.

This amendment also empowered the City to better control which and how sharing services were being offered on its streets, an important issue given the uneven distribution of vehicles, with too many in the city centre and hardly any in the suburbs (by the way, the amendment was also introduced to increase the quota of electric vehicles in the car-sharing fleets).

The Berlin Road Act classifies e-scooters, rental bikes and car-sharing as a 'special use of road land', and this enables the city to charge user fees for each vehicle on the road, regulate how many vehicles are allowed per provider, and where they may be parked. The law states that data provided by the operators is to be used to ensure compliance with these rules. Since November 2023, data from shared e-scooters and bicycles has been stored and analysed in a mobility data platform.

These rules met with opposition from the shared mobility operators right from the start. Car-sharing and e-scooter-sharing companies joined forces and formed the Shared Mobility (PSM) platform, as they feared too much regulation and the high additional costs due to the fees.

Figure 17. Berlin, DE, 2023,
At BVG's Jelbi stations, passengers combine public transport and sharing services
Shutterstock: Mo Photography Berlin

They also complained that this new law would unnecessarily weaken the alternatives to owning a car. However, since then, several e-scooter providers have changed their position and are now more open to the law.

The City is now preparing more measures, aiming for a better redistribution of the offer of shared micromobility, the establishment of no-parking zones, more parking spaces for e-scooters and rental bikes, and better integration with public transport. These measures are currently being implemented. By the end of September 2022, operators had applied for an operation permit. Since January 2023, they have to pay fees. In the next operating permit period, from January 2024 to the end of March 2025, there will be a limit of 19,000 e-scooters for all providers combined within the light rail circle.

The other measures mentioned (better redistribution of the offer of shared micromobility, the establishment of no-parking zones, more parking spaces for e-scooters and rental bikes, and a better integration into bus and train journeys) can only be realised once the data can be sensibly evaluated. This depends on the introduction of a dashboard to monitor the data provided by the operators. This dashboard has now been operational since November 2023, allowing the case for its implementation to be made in a much more data-driven and detailed way.

When it comes to the integration of micromobility with public transport, Berlin is ahead of other cities.

In 2019, the Berlin Transport Authority (BVG) created the mobility platform Jelbi. Using this MaaS app, users can choose between BVG buses and trains, rental bicycles, e-scooters, mopeds, shuttle services and car-sharing, provided by a total of 25 mobility partners. This integration effort also includes eHUBs, which can already be found at selected S+U stations (rapid railway + subway) and will continue to grow in number over the coming years.

The Jelbi MaaS app displays traffic information in real time, which allows the user to compare transport options according to duration and price. It also offers an integrated payment system, which makes it possible to pay for all journeys directly on the platform. This system has been well received by the residents, which is why it will be further developed.

In spite of this digital success, Berlin still faces a tough challenge, as the number of individual motorised vehicles is increasing, alongside the number of inhabitants. The key question is how to foster alternatives. A key step is to provide enough space for shared mobility (including car sharing) to circulate and park, even if this means taking parking spaces away from individual motorised traffic.

A mix of push and pull factors is key to further reducing private car use in the city. Experts point out that public transport has to become more attractive (increased frequency and additional connections, as well as better offers in multimodality), while the use of private cars has to be disincentivised (e.g., through higher parking fees).

This is, of course, easier said than done. City officials point out that mobility is part of everyday life and affects most individuals, which is why there are many opinions and many different attitudes on this topic, which in turn is why it is not possible to find a solution that suits everyone. More than looking for a 'one-size-fits-all' solution, the key is to find a set of solutions that, taken together, address the challenges of the future and today's reality in the life of the users.

5.3. Budapest, Hungary

When e-scooters emerged in Budapest, the debate about their ban was soon overcome as they presented an opportunity to enable last-mile connections to public transport. Shared e-scooters also started to complement Budapest's public shared bike service (Bubi), established in 2014, allowing for a wider reach, as the two schemes target different groups of users, cumulating to 200.000 users of both bikes and e-scooters.

As BKK (Centre for Budapest Transport) officials explain, the integration of micromobility is pursued on three fronts: infrastructural and spatial integration, management and control of providers, and digital integration through a common platform (MaaS).

Figure 19. Budapest, HU, 1/10/2023, MOL Bubi rental bikes Shutterstock: John Wreford

Important advances have been achieved in parking. BKK proactively carried out a macro-level network analysis (incorporating inputs from providers) to identify hundreds of locations for parking spots throughout the city, called 'micromobility points' (mMP). Some of these points are located on the part of the network managed by BKK, and their implementation was quite straightforward.

Other preferred locations for mMPs, however, were located in parts of the network where parking is under the jurisdiction of local districts. The conversion of car parking spots to mMPs became a political hot topic, because voters are sensitive to car parking, but also because parking fares are a source of revenue for these local districts. The implementation of micromobility points on these spots required negotiation and support. In some cases, financial support; in other cases, additional practical support, with the construction being undertaken by the City's agency for public works.

To ensure quality and consistency across all micromobility points, BKK established design standards. There is a unified logo, but flexibility on some elements was also kept, leaving room for innovative developments and smart cost management across all districts.

This ambitious process is underway, with some adaptations, but still aiming at having micromobility points at an interval of 150 meters in the densely populated parts of the city. The upscaling process is limited by the speed of physically constructing mMPs, but the current 600 mMPs are to be expanded with several hundred more as soon as possible.

On a strategic level, micromobility is seen as an opportunity to generate passengers for public transport. In this respect, the importance of proximity and density of the mMP is stressed by BKK officials. Denser than the traditional public transport stops (400-500 metres), the 150 metres distance maintains the door-to-door function.

BKK also believes that an efficient shared ecosystem can even convert car users to public transport, allowing for increased use and market-level profit. For that, they need shared micromobility operators to survive and thrive. Enabling the profitability of these services is considered a critical success factor, preventing private operators from running out of funding, which would leave Budapest without this mobility option.

It would be hard (though not impossible) for the city to maintain such high levels of public and shared transport coverage without the agility and capital of the private companies. BKK is therefore very much inclined to cooperate with other sustainable mobility entities, as the biggest challenge is to compete with cars, not between public and private organisations offering more sustainable alternatives.

However, there is more to infrastructure than just parking. A coherent network of micromobility-friendly paths and lanes is fundamental. Changing the perception that people have of the streets of Budapest, to ensure they won't fear riding on a bike or an e-scooter, remains key to making this mode more attractive. The proportion of e-scooters riding on bike lanes is increasing (now representing two-thirds) as the culture of micromobility is spreading among the citizens.

The consistent use of the term 'vehicle' in public relations communication emphasises the substitutional role of micromobility devices to replace cars, and has contributed to a wider adoption of this mode. In addition, the promotion of micromobility as an active option is an invitation to consider shifting modes out of health concerns.

To involve citizens, a public campaign was launched to choose the name of the mMP, similar to what had been done with the Bubi bike service. It generated engagement and presented an opportunity to educate people on shared e-scooters and mMP. Less than a year after the introduction of the micromobility points, 80% of Budapest citizens were already aware of them and had an overwhelmingly positive opinion about them.

For BKK officials, there's an important lesson here: having the right density of mandatory parking zones is essential, even if compromise is necessary to actually implement them. They should be simple and cheap to implement, to overcome the reluctance of some local entities – paint is a good starting point. Also, for the authorities who can afford them, bike racks should be installed as soon as possible, as they are very effective in preventing abusive car parking.

Having taken care of the basics, BKK is now advancing to the next step: digital integration of shared micromobility services in BKK's route planner application along with public transport.

5.4. Czestochowa, Poland

Shared micromobility arrived in Czestochowa, a Polish city of more than 200,000 residents, in the wake of the pandemic, when people were more inclined to use personal vehicles. By 2021, with shared e-scooters operating in several Polish cities, the Ministry of Transport adopted national-level regulations, defining e-scooters as 'personal transport vehicles'.

Czestochowa decided to take action at the local level as well. Road safety was already a serious concern for local authorities, which for years had launched awareness campaigns targeting drivers. Now, the arrival and growth of e-scooters required special attention.

To separate bikes and e-scooters from motorised traffic, the City made significant investments in cycling infrastructure. Segregated bike lanes now total 100 km throughout the city. On streets without bicycle lanes, the City is adopting various solutions, e.g., where possible lowering the speed limit to 30 km/h. Most e-scooters now ride safely along bicycles.

To prevent clutter on pavements – a major public safety and accessibility concern – the City created designated parking spots, 'hotspots', throughout Czestochowa, a total of 27 to this date. These hotspots are located near schools and close to public transport.

Cooperation with operators and local regulations helped overcome the challenge of wrong parking. Geofenced hotspots prevent riders from finishing their journey if the vehicle is incorrectly parked. The two-meter precision of GPS remains a technical issue, but correct practices have become a habit, as people have learned to ride and park more consciously.

City officials consider e-scooters have integrated well, and consider them to be particularly helpful to enhance access to public transport stops, covering longer distances, and offering alternatives to cars. Shared micromobility is thus bringing passengers to public transport, a golden opportunity for integration and sustainability.

A new Sustainable Urban Mobility Plan (SUMP) under development (covering 34 administrative districts and municipalities) will advance this integration of micromobility and public transport throughout the Northern Subregion of the Silesian Voivodeship.

Figure 21. Czestochowa, PL, 2/08/2020, City bikes for rent in Czestochowa Shutterstock: Krzysztof Bubel

As of March 2023, there is only one operator present in Czestochowa, which is cooperating well with the authorities. Data sharing practices with this operator have already enabled the authorities to successfully plan for new infrastructure developments and investments. Shining a positive light on micromobility, the huge interest recently sparked by e-scooters as a dependable alternative to cars is likely to attract new operators.

For younger generations yearning to be independent yet environmentally friendly in their journeys, micromobility is already a widely used option. The City is also set on increasing awareness among children by organising school competitions to increase bicycle journeys.

City officials believe that, to convince older generations, often keen on using their cars, it is very important to offer reliable alternatives and effectively promote micromobility as a commuting option. Local authorities are actively negotiating with firms in Czestochowa's economic zone to determine possible locations for new bike lanes. Several companies and employees have already been convinced and shifted to this new mode, a very positive sign.

5.5. Faro, Portugal

Faro, a Portuguese small coastal city, welcomed shared micromobility operators by creating a fully developed scheme for e-scooters, articulated with public transport. This scheme filled the previous regulatory gap and allowed for the first e-scooters trials to start in February 2019. Through agreements to run micromobility as a public service, operators were exempt from taxes, as the existing framework (taxation for commercial activity in public space) was considered a significant obstacle for a new market service.

Both sides considered clear communication to be very important, as the situation was prone to evolve. Open meetings were held with various stakeholders, including public transport operators, universities, stakeholders in the transportation system and police forces.

While this new mobility option first caused apprehension because of its impact on public space, the quick response of operators, with the help of data, helped to act fast on emerging concerns before they turned into actual problems. The City is aware that listening to complaints is necessary – letting anger build up could cause operations to be less appealing for both users and operators.

The municipality intended to swiftly implement regulations, but the COVID-19 pandemic disrupted what was originally planned. The current aim of the new transport authority is to adopt clear regulations by the end of 2023 and run a public tender to select two or three operators. The possibility of welcoming both bikes and e-scooters is open, although the previous public bike trial was not very successful.

To guarantee viability, this mixed operation would have to be subsidised by the municipality. While e-scooter operations tend to be profitable, the higher operational costs of bikes make them less appealing, commercially. The profitability concern is stronger for smaller companies, which otherwise risk being bought off or simply closed down. Hence, the municipality considers it cannot be too demanding regarding investments from the operators.

As increased demand is necessary for the operators to stay in Faro, the authorities will also need to find a balance when regulating micromobility in the future – not being too severe on lightweight options while too lax on the private car. Effective modal diversity offers alternatives to cars, which are the ones monopolising public space. For this purpose, these alternatives should be easy, cost-effective and available – and the car should become the least attractive option.

Figure 22. Faro, PT, 16/02/2020, E-scooters parked in Faro Shutterstock: Mauro Rodrigues

In the long run, to better contribute to the integration process, the redistribution of public transport's (rather large) subsidies toward shared micromobility could be a solution. Integrated offerings could even help grow public transport ridership and produce benefits for all.

This integration process has been relying mainly on hotspot parking locations, first next to public bus stops to enable the first and last-mile, then by car parking spots reallocation. Blended approaches, and the reduction of the city's speed limit remain Faro's best options for integration.

The aim is now to fill technological gaps through new data specifications. Geofencing inaccuracies have eventually led to poor parking and cluttered sidewalks, which could be avoided with the more precise MDS 2.0 [16]. Temporary road closures could be directly updated on systems, and awareness could be increased on the origins of non-compliance issues (e.g., unclear instructions), thus contributing to smoother rides and targeted ameliorations.

Offering shared micromobility for low-income users persists as a key issue, and that is where public bikes must step in. The current shared bike experiment has failed in the city, partly due to shortcomings in procurement specifications, lack of experience on the part of operators, and an insufficient number of bikes.

With these lessons in mind, the municipality would, in the future, require higher numbers of bicycles in lower-income areas, and strive to establish more integrated payment plans with public transportation (a tough challenge, because having a common interface to handle reservation services remains very demanding in terms of investment).

City officials consider that, over the next few years, the challenge is for micromobility not to lose its appeal. Shared vehicles should be effectively perceived as an active piece in the mobility system, not a decorative item in the public realm. To step up its game, in 2019 committed to following 'The Shared Mobility Principles for Liveable Cities' [17].

5.6. Leuven, Belgium

The development of shared and multimodal mobility services is a key element in Leuven's Sustainable Urban Mobility Plan (SUMP) and climate neutrality strategy.

When the first shared micromobility operators expressed an interest in offering their services in Leuven in 2019, the City took it upon itself to allow them access to public space only under certain conditions. As a first step, it was decided that shared micromobility operators could only offer their service if they had a license, granted by the City.

[16] MDS stands for 'Mobility Data Specification'. MDS standardises communication and data-sharing between cities and private mobility providers (e.g., e-scooter and bike-share companies). More information here: https://www.openmobilityfoundation.org/about-mds/
[17] Available here: https://www.sharedmobilityprinciples.org/

The City also decided against the use of free-floating shared micromobility, to maintain order in its public space (a scarce resource), and guarantee the accessibility of the public domain for pedestrians and persons with disabilities. For Leuven officials, the only transport mode which can really offer a door-to-door service level is walking, and free-floating e-scooters are not to receive the same level of importance.

This does not mean Leuven is not interested in shared micromobility – quite the contrary. The City is actively encouraging its growth and development, namely by providing its mobility hubs at strategic locations connected to other modes of transport, and smaller hubs in residential areas. At these hubs, shared bikes, e-bikes, e-cargo bikes, and electric shared cars are clustered to offer users a wide range of mobility options – the best way to serve different users, moving for different purposes, and different times of day, week, and year.

The good visibility of these mobility hubs has been crucial for their acceptance and use of the services by the residents. But it's not enough – increasing their usage is a priority. To this end, the City is developing a nudging plan, which will primarily target residents of Leuven, and secondly commuters and visitors. The plan will try to overcome the initial resistance (or inertia) to using the existing and growing shared mobility services offered at the mobility hubs. It will also pilot parcel lockers as an additional service at these mobility hubs to attract more people.

By offering car sharing at the neighbourhood level as an alternative to private car ownership, the City of Leuven is making room for walking and cycling. A similar strategy is followed for e-cargo bike-sharing. During the first three years of the concession offered to the cargo bike provider, Leuven will subsidise 30 e-cargo bikes at determined locations. The question remains whether after this period they will be profitable for the operator. Testing has already shown that the uptake of the cargo bike can be improved, and not all city districts nor potential target groups are yet covered.

In the near future, the City may also consider offering e-bikes – but this should happen in cooperation with private operators, and not at the expense of the use of regular bicycles.

Leuven is also looking with interest at the development of peer-to-peer and community-based platforms, which can be a further solution to spread shared mobility.

Digital integration is an important point – on this front, the city sees much room for improvement, but prefers to see this rolled out on a regional scale.

5.7. Lisbon, Portugal

E-scooters made their debut in Lisbon in 2018, and the offer expanded rapidly. In 2019, there were already fourteen different shared micromobility operators in the Portuguese capital, nine of which were operating e-scooters.

Due to the rapid expansion of this new mobility service and the relatively new technologies it was using, the City decided, first, to introduce soft (non-binding) regulations. These included a memorandum of understanding (which sought convergence of goals on the part of the City and the operators) and regular meetings between the operators and the City.

These soft regulations were complemented with informal contacts on a daily basis, some improvements in parking infrastructure, the extension of the network of bike lanes, and occasional cooperation with other stakeholders, including the Municipal Police, the Municipal Parking Company EMEL, the National Association of the Blind (ACAPO), and the regional public transport ticketing platform OTLIS (now integrated into the Metropolitan Transport Authority).

This soft approach, however, had its limitations. The City felt the need to sanction non-compliant operators, but did not (and still does not) have the means to do so.

Very quickly, Lisbon started to face problems similar to several other cities, first and foremost with the parking of floating shared e-scooters and bikes on the sidewalks, which disrupts the flow of pedestrian traffic and raises the risks for people with disabilities, particularly for those with visual and motor disabilities.

The perception of an increase in the number of crashes became an additional problem, although there are limits to an objective assessment: the statistics on 'crashes with victims' provided to the City aggregate e-scooters and bikes, and make no distinction between private or shared.

Furthermore, City officials point out that the operators did not share data on journeys, fleets and driving patterns, making it difficult for the City to plan for adequate infrastructure and to get a better understanding of the role of shared mobility. Aggregated data on journeys, fleets and other features was shared regularly for some time, but during the COVID-19 pandemic this situation changed.

The City is also concerned about modal shift, as shared micromobility seems to mainly attract individuals who were using public transport or walking.

In 2021, after local elections brought into office a new Mayor and executive team, the City started working on a specific regulation to address these challenges. However, this process 'hit a wall': the national legal framework that sets out the powers of local government. Although local governments can regulate public space usage through authorized circulation and parking areas, they do not have authority over the licensing of shared micromobility economic activity. This led to the adoption of a transitory soft regulation approach, oriented towards solving three main issues: excessive aggregated fleet count (which now totalled over 16,000 units); chaotic deployment and parking of vehicles; and high top speeds.

A MoU was signed with the active micromobility operators, establishing fleet size limits, a 20 km/h top speed, and a mandatory parking protocol, with the City now setting up a number of parking hubs that will massively increase parking capacity. In addition, arrangements have been made for the City and the operators to hold a regular dialogue, through monthly general meetings, individual ad-hoc meetings, and open communication lines which include a point of contact and a shared Whatsapp channel.

A platform is also being developed to allow the City to monitor in real-time the location of all shared micromobility units, and to assess patterns, imbalances and irregularities. Enforcement will also increase.

City officials assess positively the first effects of this agreement and are now stepping up efforts to increase parking capacity. They are also studying different options for enforcing a harder regulatory stance, and for selecting a limited number of operators, in order to provide a more stable operating context for all.

Despite the downsides of Lisbon's experience with shared micromobility, City officials emphasise that shared micromobility is desirable – these new services are being taken up by the population, and they can become useful to serve parts of the territory that aren't easily accessible by public transport. In this context, the City observes with interest some cases of cooperation between private operators and public transport.

5.8. Madrid, Spain

In the Summer of 2018, the Spanish capital Madrid was working on sustainable mobility regulations when free floating e-scooters arrived on its streets. Aware of the negative repercussions these new unregulated vehicles provoked in other cities, local authorities decided to tackle the issue without delay.

Figure 27. Madrid, ES,
Shared mobility in Madrid
Shutterstock: WK Lai

The establishment of a required authorisation to operate forced all e-scooters operators already present in Madrid to withdraw their fleets.

Afterwards, in January 2019, and now in accordance with the new regulations, twenty-one operators were authorised to deploy in the streets of Madrid. This 'open approach' did not prove to be satisfactory either for the numerous companies or the administration. Indeed, the contingencies of the market led many operators to abandon the city, until only five or six were left.

Aspiring to provide the best services for their citizens, local authorities took their regulatory approach one step further, launching a tender process that restricted the number of operators to a maximum of three, and aligned selection criteria with the City's strategic view. This selection process has been concluded, and the new deployment took place in May 2023.

This analysis of the Madrid case focuses on the process established by the City for selection of the e-scooter operators. Development of the selection criteria was informed by the City's own experiences, the suggestions of Madrid citizens and e-scooter companies, and the experience of other cities. The two guiding goals were enabling cooperation between local government and operators, and fostering public acceptance of this new service.

The evaluation of proposals used a point system to apply the following selection criteria:

- To ensure that operators had the ability and capacity to answer Madrid's demands, the City favoured experience operating in other big cities (i.e., with a similar or higher number of inhabitants).
- To improve road safety, preference was given to the companies that passed the e-scooters technical certification process, i.e., that met technical specifications established by the Spanish DG of Traffic [18] for 'personal mobility vehicles'.
- In order to decrease the number of logistical interventions for charging, the selection favoured vehicles with swappable electric batteries [19].
- The tender also favoured operators able to withdraw any damaged or unlawfully parked vehicles from the public area within the shortest time window.
- Considering public transport must be on top of the mobility pyramid, the City wants shared micromobility to complement it. Thus, the tender called for operators to integrate their services into the Madrid Mobility 360 Platform (MaaS).;
- The technological ability and accuracy to ensure lawful parking was also a criterion used for selection. In the historical centre, the journey cannot be finished outside a parking hotspot, while in the rest of the city, the journey cannot be finished if a parking hotspot is located less than 50 meters away. The City considers this necessary to ensure safe rides and decrease the risks of crashes with pedestrians or problems of access.
- Technological ability to prevent or minimise circulation on sidewalks and other riding malpractices.
- Two of the criteria were focused on the ability to influence and train users: requiring operators to have an action plan to raise awareness for basic safe use, and practical courses to increase familiarity with e-scooters.
- Finally, to minimise the environmental impacts of the logistical component of shared micromobility (redeployment and recharging operations, vehicle manufacturing, maintenance and disposal), the selection favoured operators committed to using for logistics a fleet of vehicles that respected the environmental badge of the Spanish DG of Traffic [20].

[18] The 'Resolución de 12 de enero de 2022, de la Dirección General de Tráfico, por la que se aprueba el Manual de características de los vehículos de movilidad personal' [translation: 'Resolution of the 12 January 2022, of the Directorate General of Traffic, which approves the personal mobility vehicles' manual of characteristics']. This manual establishes several technical specifications and the process to verify their conformity. Available here: https://www.boe.es/diario_boe/txt.php?id=BOE-A-2022-987

[19] A swappable battery is an electric battery that, when discharged, can be quickly and easily replaced with a fully charged new one. Using a system of swappable batteries enables the operator to simply 'swap' the battery, instead of carrying the whole vehicle to a charging station.

[20] The Environmental Badge of the Spanish Directorate General of Traffic [Distintivo Ambiental DGT] is a label that identifies the most environmentally friendly vehicles (according to energy efficiency). More information here: https://www.dgt.es/nuestros-servicios/tu-vehiculo/tus-vehiculos/distintivo-ambiental/

The tender also set a maximum on the total number of vehicles that could be deployed in the streets of Madrid: 6,000 in total, with 2,000 per operator. The aim is to have enough e-scooters to comply with real demand, while not tolerating too many parked ones. This maximum may in the future be raised, if sufficient use is proven. This is expected to work as an incentive for operators to expand their operations to exterior underserved districts of Madrid. If they wish to increase their presence, they will have to increase the offer outside the city centre.

The City also included in the tender the obligation of identifying users (within the rules of data privacy protection). This was to clarify liability and reduce friction. Many fines had been issued before to operators, due to non-compliance with parking rules by their users (whose identity was unknown to the authorities). This led to judicial confrontations and palpable tension between the operators and the authorities.

Finally, and because the City considers that this business hasn't reached a stable situation (at least in Madrid) and will undergo further changes, the operating licenses that started in May 2023 are limited to three years, with the possibility of a one-year extension. Another tender will follow, to guarantee the best possible services in the future.

5.9. Oslo, Norway

In the Autumn of 2018, the first free-floating bikes arrived in Norway – but they soon disappeared with the snow. Then, in the Spring of 2019, the e-scooters came along. The City wasn't sure if they'd stick around for long – and very few could predict the chaos they would bring about.

In 2020, legal proceedings in other Norwegian cities (Bergen and Trondheim) showed that it was difficult for cities to ban certain operators and set conditions for rental activities on public land. This led to a rare legislative action. Usually, national laws are prepared by the Norwegian Government, starting a legislative path that can take years. Yet, the Parliament, having acknowledged the need for an urgent response, in only one month developed a legislative proposal which was approved and became law [20]. A law that gave municipalities the right to limit the deployment of shared e-scooters and e-bikes on public land. One month after this law came into force, the City of Oslo adopted a local regulation which addressed several challenges raised by shared e-scooters.

[20] https://www-stortinget-no.translate.goog/no/Saker-og-publikasjoner/Saker/Sak/?p=84807&_x_tr_sl=no&_x_tr_tl=en&_x_tr_hl=no&_x_tr_pto=wapp

One month after this law came into force, the City of Oslo adopted a local regulation which addressed several challenges raised by shared e-scooters.

Among other things, this regulation limited the maximum number of shared e-scooters to 8.000, but it did this without reducing the number of operators, which led to unsustainable competitive conditions. The local regulation thus had to be adjusted not long after coming into force – and so, in February 2022, a new version came into force, this time establishing a maximum of 3 operators for that maximum of 8,000 e-scooters.

Local officials mention that, as transportation keeps on changing, the City may have to adjust its regulations several times in the years to come. They say things aren't perfect yet, and that the regulations on shared micromobility are still recent in Oslo, but they also point out that the overall situation is promising.

E-scooters are very popular and turned out to meet a mobility need. They remain a politically hot topic, however, and some fear that calls for regulatory action may lead to overregulation, which in turn might undermine the potential contribution of shared micromobility to the shift towards sustainable mobility.

City officials point out that when something new arrives, it's easier for the spotlight to shine on what goes wrong than on what could go right. They mention as an example the case of skateboards, which were banned in Norway for 11 years because they were seen as dangerous. They could have become an appealing mode for young people to get around while promoting physical activity and health. As the target now moves to e-bikes and e-scooters, officials wonder if history could be repeating itself.

Experience shows that handling bad behaviour by making it illegal does not necessarily prevent it in general. Education, training and enforcement are more effective, and when bad behaviour isn't threatening life and health, also it may be useful to have some patience. When people are learning to walk, bike or drive, it takes time – maybe the same principle could be applied to the use and organisation of shared micromobility as well.

To promote the use of alternatives to private motorised vehicles, infrastructures, safety, and availability have to be so reliable that micromobility becomes an easy option. Oslo has transformed a lot of streets by reducing the volume and the speeds of motorized traffic, and by giving more space to bikes and bike lanes. That is probably one of the reasons why shared micromobility is so popular in the city. If one invests in in infrastructure to improve conditions for micromobility, users will trust it, and use it.

Integration is also important. The City is collaborating with the public transport company to make micromobility a part of the public transport system. To foster this complementary use, the most important is to create parking space for these vehicles near public transport stops. Research in Norway shows that clearly marked parking spots are the most effective way to ensure compliance.

Geofencing is an important complement to visible markings and can be used to increase the use of parking spots, but it is not being used in Oslo yet. Officials mention lack of accuracy as an obstacle to its adoption, explaining that geofencing too small areas can do more damage than good.

Oslo has many bike racks, which can be used for parking shared micromobility devices along with private ones. Many of the bike racks are located in squares and on sidewalks. Upscaling these racks hasn't been easy, because all 15 boroughs in Oslo have the power to decide how the sidewalk should be used.

Although it does not always have much room for manoeuvre, the City is nevertheless keen on transforming streets through space reallocation (even if temporary) and street furniture: closing streets during summertime, using paint, flowers, and benches to make streets more people-friendly. In several streets, physical traffic calming measures have made it impossible for cars (but not pedestrians and bikes) to move in a straight line. Reducing motorised traffic speed 'levels' competition between motorised traffic (cars, vans, buses, trucks) and smaller and lighter vehicles, contributing to a more efficient mobility system.

And there's more: in several streets, car parking spots have been turned into contra-flow bike lanes [21]. In the Grünerløkka district, the traffic circulation changes at each junction; although this might confuse some drivers at the beginning, they get used to it, especially as this has become common in Oslo. Driving becomes less convenient, but not impossible for deliveries or imperatives. Socially, this can also avoid a war against cars. City officials mention the case of Torggata Street, which hasn't been made a 'bicycle street' but it effectively works as one – the roadway is still segregated, but bollards at its intersections filter out cars, allowing only bikes and light electric vehicles to pass. Cyclists seem to love it, and the very low curbs make it popular for people walking as well. During rush hours, bicycles fill up the roadway, but on Saturday evenings this same space is taken over by pedestrians, as this is a lively and social area full of bars and restaurants. The space is free to use, and the system is flexible, which is great for acceptance.

[21] Contra-flow bicycle lanes allow people cycling to travel in two directions on a street which is one-way for motorised traffic. A segregated bike lane enables bikes to travel against motorised traffic, while travel in the same direction of motorised traffic is (usually) done without segregation, i.e., by sharing the roadway.

5.10. Paris, France

For several years now, a key goal driving the City's mobility policy has been to reduce pollutant emissions by prioritising more sustainable and active mobility, imposing a gradual ban on highly polluting vehicles and aiming, in the long run, for a drastic reduction of individual motorised transport. This goal also shapes the way the City deals with shared micromobility.

In 2007, the City launched a public service called Vélib', a station-based bike-sharing scheme, as an affordable way to promote active mobility. In 2009, the service was deployed in other municipalities of Greater Paris. This was followed, in 2016, by dockless electric mopeds. Dockless bikes arrived in 2017, during a transition phase in the Vélib' contract. The City put out a new tender for Vélib', which was won by a new operator: Vélib' Métropole, operating since 2018, and running today in more than 50 municipalities of Greater Paris, providing 20,000 bikes. This transition was quite challenging, especially because of the introduction of electric bikes (up to 30-40% of the fleet), and the need to match that with the charging infrastructure. This generated a 'crisis' in the service for several months, with a marked lack of bikes.

Private operators saw in this crisis an opportunity to deploy in the city – combined, of course, with the high market potential in Paris, due to a reliable public transport offer, massive numbers of tourists all year round, and a vast high-density area (20,000 inhabitants/km2), with many higher-income residents who are willing and able to afford shared private mobility services – and that, in many cases, have already become used to them. The wave had started, and in 2018 other companies brought e-scooters to expand the shared micromobility offer.

The rapid spread of free-floating mobility devices in public spaces became a problem. The local population resented their mass presence on sidewalks and in high-traffic areas and demanded action from the City. This prompted the City to establish a regulatory framework and to enter into a constructive dialogue with the operators, in search of practical solutions.

One of the first measures was a charter of conduct, which the City signed in June 2018 with electric moped and dockless bike operators, and later, in May 2019, with e-scooter operators. Among other things, this charter required operators of free-floating services to do everything within their reach to ensure applicable regulations (traffic, safety, etc.) were provided in an understandable format to their users. Emphasis was also placed on national accessibility regulations, which stipulate that sidewalks must have a 1,40-meter-wide accessible path of travel, free of obstacles.

Although it was not legally binding, the charter did impose a moral obligation on the signatories. Signing the charter was not mandatory, but all shared micromobility companies operating in Paris at that time signed it. It was followed by the first formal (and legally binding) decision of the City Council, which obliged shared micromobility operators to pay a fee, the amount of which depended on the size of the fleet and the type of motorisation.

Later in the same year, the City published a by-law regulating the parking of self-service devices for personal transport. This by-law set out the rules for parking the devices in public spaces and stipulated that parking was only allowed in designated areas reserved for motorised two-wheelers. To obtain the right to park their shared devices in public space (for a fee), the operator had to submit an application to the administration.

The City also asked e-scooter operators to cap any further deployment and decided to reduce the number of e-scooter operators to three, launching a public tender for that purpose. These were, in a way, provisional measures, implemented while waiting for national legislation to enter into force.

At the end of 2019, France enacted national legislation (the Loi d'Orientation sur les Mobilités) which finally provided a clear legal framework for the regulation and the occupation of public space by dockless fleets. This law was complemented by a national decree, which introduced in the Highway Code a new category of vehicles: engins de déplacement personnel (motorised devices for personal mobility).

Figure 30. Paris, FR, November 2022,
Bikes of a Vélib' rental station
Shutterstock: JeanLucIchard

While legal frameworks evolved, the pressing need remained to create parking for floating e-scooters. Therefore, the City invested 1.7 million Euros to create parking places, aiming to provide one every 150 m to 200 m. As a result, a total (maximal) parking capacity of 15,000 shared e-scooters was created, with more than 5,000 parking places for dockless bikes distributed across Paris. This solution led to clear improvements in sharing public space.

Improving user behaviour was the next challenge the City prioritised – in particular, to find ways to ensure sidewalks remained accessible for persons of all abilities. The first step was to include universal accessibility in the public tenders. Workshops with users were conducted, and a 'Code de la Rue' (Street Rules) was established. While studies showed that these shared micromobility services were mostly being used by young men with higher incomes, the City also knew that recurrent public transport strikes were bringing in new users.

The City also looked at other key issues, such as the growing sales of individually-owned e-scooters, how to better understand the users and make shared micromobility accessible to all, the impact these individual electric mobility services were having on urban mobility, and their overall environmental impact (considering their life cycle assessment, their carbon footprint and, not the least, their benefits in terms of modal shift, because Paris' population would mostly walk or use public transportation).

Then the referendum came. The regulatory progress made so far wasn't, apparently, enough to appease recurrent complaints from citizens, and the actual contribution of shared e-scooters to the advancement of sustainable mobility in Paris was questioned. On Sunday 2 April 2023, Parisians who were registered on the electoral lists were invited to vote 'For or against self-service scooters' in one of the 203 polling stations deployed for the occasion [22]. Of the 1,382,322 registered Parisian voters, around 7.5% came to the polls (103,084). Of those, 89% voted to ban shared e-scooters from the streets of Paris [23].

'Parisians have massively expressed themselves against keeping shared e-scooters,' Paris Mayor Anne Hidalgo said. 'They have given us a very clear roadmap, and we are going to abide by their decision.' By midnight of 31 August, the e-scooters were gone... but only the shared ones.

[22] For the sake of detail: this was not a referendum, which delegates the decision to the voters, but rather a 'consultation citoyenne', which consults voters to support the decision-making by elected officials
[23] Official results are available here: https://www.paris.fr/pages/pour-ou-contre-les-trottinettes-en-libre-service-23231

5.11. Stockholm, Sweden

In the Autumn of 2018, the first e-scooters arrived in Stockholm. Within a year, the Swedish capital had 11 operators running several thousands of vehicles. Numbers grew fast – they peaked in 2021, reaching over 24,000 e-scooters. This scale surprised the municipality, which lacked the necessary legal means to regulate shared micromobility.

Figure 32. Stockholm, SV, 21/08/2023, E-scooters parking rack in Stockholm Shutterstock: Susie Hedberg

The Swedish Transport Administration had determined that e-scooters should be subject to the same rules as bicycles. This turned out to be problematic, because all regulations for e-scooters thus also affected privately owned bicycles – for example, the introduction of parking bans or no-drive zones.

A voluntary agreement was negotiated and signed between the Deputy Mayor of Stockholm and the e-scooter operators in 2019. By signing the agreement, the operators committed to abide by certain rules (e.g., speed limits in certain areas, collecting defective equipment, etc.), while the City committed to providing parking spaces. All shared e-scooter companies operating in Stockholm signed the agreement.

Soft regulation, however, was not enough. In 2021, the City Council was confronted with increasing problems around e-scooters: crowded streets, a disproportionate amount of e-scooters in the city centre, and complaints, lots of complaints. So it decided to introduce hard (binding) regulations.

E-scooter operators now have to get a permit from the City, which has set the maximum number of e-scooters allowed on the streets at 12,000. When deploying and rebalancing their fleets, operators have to park their vehicles in hotspots. At the start, there were 100 of these hotspots. Users could park according to parking rules wherever they wanted to.

With the change in the national regulation, it became mandatory to park e-scooters in parking racks and hotspots. The City has therefore increased the number of hotspots to 700, and is in the process of adding a couple of hundred more. All the hotspots are now open for the operators to deploy their e-scooters and for the users to park.

Current challenges are related to user behaviour, including the use of e-scooters by two passengers, the violation of traffic rules... and parking. In Sweden, only the police are allowed to enforce traffic behaviour. Cities are responsible for enforcing parking rules.

City officials stress that it's important to adapt regulations to the respective context. As the legal frameworks in different countries are very different, policies and regulations cannot be directly copied from other countries. Furthermore, urban mobility is a domain that is constantly changing, which is why it is important to follow developments.

5.12. Vienna, Austria

When the first rental bikes appeared in the Austrian capital in 2018, the picture was similar to that in other major European cities – chaotic parking that endangered pedestrian traffic, and vandalised bikes scattered and uncollected in several places. The City started receiving complaints through various channels, with the population pointing to incorrect parking and use.

Fortunately, the City 'had an ace up its sleeve' that enabled a relatively fast response: the so-called 'ortspolizeiliche Verordnung', a local police ordinance which allowed for a fast response. This legislative tool empowers Austrian municipalities to issue independent, law-supplementing ordinances. Specifically, the City stipulated that broken rental bicycles, or those parked in violation of traffic regulations, had to be collected within a certain period of time after notification. If this was not done, the bikes would be removed for a fee, plus administrative fines.

Vienna's new ordinance also stipulated that each rental company had to obtain accreditation. The rental companies had to fulfil additional requirements, such as having a registered office in Vienna and providing a service hotline for customer support. Furthermore, all rental bikes had to be labelled and numbered.

When the first e-scooters arrived on the market, it was decided that the City's local ordinance for free-floating rental bicycles would apply to them as well.

At this time, e-scooters in Vienna were legally defined as bicycles, and their users had to comply with the same rules that applied to cyclists: traffic rules and speed limits must be observed, and riding on sidewalks is prohibited. Furthermore, e-scooters must be parked in a way that doesn't obstruct or endanger other road users, namely pedestrians.

Following the accreditation agreement, e-scooter and/or free-floating bike operators were also required to provide their users with comprehensive information regarding safety.

In 2019, these regulations were adjusted, as the Austrian Road Traffic Code was amended, coming to define e-scooters as 'small vehicles primarily for off-road use'.

In the following year, the City added new regulatory requirements, including rules for parking of e-scooters on sidewalks (only on wide pavements), balanced geographical distribution, faster removal or relocation of improperly parked e-scooters, a pilot to test fixed parking areas, and restricted areas where e-scooters aren't allowed to circulate or start or end trips.

The City considered it important to create conditions for the proper use of shared micromobility, as many Viennese use it as a complement to public transport, bicycles and cars. It seems that, during the pandemic, many people started using shared micromobility to avoid crowded public transport, and, at the same time – according to Viennese rental companies – the distances travelled have become longer.

Figure 34. Vienna, AT, 17/04/2020,
Electric scooters and bicycles in Vienna
Shutterstock: Lisa Culton

And now, what is next?

The city of Vienna tightened the rules for rental e-scooters from 19 May onwards, banning them from being parked on pavements. From now on, e-scooters must be parked in designated scooter parking areas or in parking spaces for cars. Restricted zones are also being set up – around hospitals, in market areas and at municipal buildings, it will no longer be technically possible to ride or park the scooters.

Vienna is also acting on speed: inside the so-called 'slow zones', such as residential streets, pedestrian and meeting zones, the speed will be automatically reduced, and depending on the zone, it can even be reduced to walking speed.

Vienna also stepped up its game when it comes to data collection, via a digital dashboard that provides in real-time the location of all scooters, enabling consistent penalisation of illegal parking.

There are additional changes to enforcement as well. 'Parking sheriffs' will now monitor compliance with parking regulations and, if necessary, report violations, which can lead to fines. Wrongly parked scooters must be removed immediately by the operators, or penalties will be imposed – and, unlike before, scooters can be impounded.

On July 2023, an additional set of measures came into force to regulate shared e-scooters, as the City awarded scooter concessions to four selected operators on the basis of their proposals. These proposals include several key elements:

- Users will be required to provide photo verification after parking the e-scooters to ensure proper parking (this is complemented by GPS tracking and other technical systems); An increased number of stewards will be present throughout the city to provide assistance, control and reposition the e-scooters, with services available during evening and night-time hours;
- All scooters will have number plates (similar to car number plates) for easy identification;
- Free helmets and mandatory breathalyser tests during late evening hours;
- Operators will extend their coverage to the entire residential area of Vienna, improving last-mile options, especially for residents in the outer districts and suburbs;
- Users will have access to various incentive schemes, including reduced tariffs for outer district residents and free kilometres for slower driving. Multiple fare schemes will cater to different target groups, including annual season ticket holders of the Wiener Linien.
- All operators will be seamlessly integrated into the WienMobil app as partners.

6. Conclusions

The main purpose of this Report was to provide a strategic perspective on how cities and regions are regulating shared micromobility. What goals do they have in mind when regulating? How are these regulations developed? What tools are they using? What challenges lie ahead?

From the information and insights collected emerges a diversified and complex reality. First, because Shared Micromobility is neither simple nor static: it includes a growing diversity of vehicles (bicycles, e-bikes, cargo bikes, e-scooters, and whatever will come next). Its business models will keep evolving as well, and so will the views of its funders.

Second, because the local and regional authorities regulating this phenomenon operate in different contexts, where they may face different challenges, may pursue different goals, and may follow different procedures.

It is pointless to search for 'the' right way to regulate Shared Micromobility. Doing so is like dealing with a hydra, as for every question 'answered', two new questions arise.

Acknowledging this diversity (in the actors, the contexts, and the regulatory practices) as a fact, a natural and inevitable fact, will help us look beyond its practical inconveniences, and make the most of its potential: homogeneity never breeds innovation nor better context-responsive solutions.

There are some common threads, of course, and those are what we choose to address here. As a network of European cities and regions committed to advancing sustainable mobility through transport innovation, what can (and should) we take away from this?

I. Dialogue is good, but not enough.

Very few cities had rules in place for shared micromobility when it arrived on their streets. That's how it often works: innovation comes first, and regulations follow, trying to catch up. When these services were introduced, both operators and regulators knew that not all the conditions were in place, but hoped to create them along the way. Dialogue and cooperation made some progress, but at some point it was not enough.

It is a mistake to think that regulation is only in the interest of the public sector. Quite the opposite. In some cities, for example, the lack of formal market access rules has led to a tsunami of e-scooters and cut-throat competition to the detriment of all operators. And the lack of enforcement penalises, rather than rewards, those who invest in quality and safety, forcing operators into a race to the bottom, ultimately delaying or even blocking the uptake of this new mobility service.

Regulation provides much needed stability. Longer licences can encourage investment in better vehicles, longer-term employment for local staff, better responsiveness to local needs, and closer cooperation on data sharing and operational issues, all of which will enable cities to fully realise the potential that shared micromobility can offer them. As seen in Oslo, service providers can achieve impressive ridership levels despite - or because of - fleet size caps. Profitable and stable markets will attract operators, allowing cities to set conditions and make choices.

II. Regulation can be reactive, or proactive.

Context is key to understanding local regulations. Some challenges and solutions are common, but the way things unfold is highly context-specific. No wonder: since urban mobility is at the heart of urban life, its regulation becomes a politically charged process, very sensitive to local dynamics (what happens on the streets, how public opinion reacts to it, how elected officials discuss it among themselves and with their constituents, what options are available, etc.). Nevertheless, we can identify two general approaches that could be placed at opposite ends of a spectrum [24].

At one end of the spectrum is a more 'reactive' approach, which we can call 'Regulate to Mitigate'. It focuses on containment and control. This approach sees shared micromobility not so much as an opportunity to improve the urban mobility offer, but as something to be endured. Lacking a strategic purpose, it doesn't pursue or create opportunities, and while it does address problems, it often ends up addressing symptoms rather than causes, which can actually exacerbate existing problems (e.g. reducing the speed of e-scooters and not doing the same for motorised traffic will increase the speed differential and lead to more riding on pavements).

[24] Of course, things are not 'in black and white', and several cities are somewhere along this spectrum.

At the other end of the spectrum is a proactive approach that we can call 'Regulate to Accelerate'. It considers that shared micromobility can support the transition to sustainable mobility by enriching the portfolio of alternatives to private car ownership and use, and by supporting access to public transport. The focus is on channelling the initiative, capacity and capital of these private operators to serve the public interest through win-win solutions. This includes creating stable conditions for shared micromobility to operate, consolidate, grow and integrate.

III. Rules need follow-through, including physical action.

Regulation is a process. It can use different tools and apply them at different times - but it's only effective if it's consistent and enforced. Rules that cannot be enforced because of a lack of legal authority or organisational capacity are of little use. The same applies to setting rules for user behaviour - if the environment in which that behaviour takes place isn't changed, the regulator will be left to deal with recurring behaviour that is encouraged by the infrastructure. Demanding responsible parking doesn't help if there is no parking available in the first place.

Are cities changing to accommodate shared micromobility services by calming traffic, expanding the cycle network and increasing parking capacity for bikes and e-scooters? In many cases, apparently not much, and not fast enough. Of course, dismantling the legacy of a century of car-centric transport planning and traffic management is no easy task. Nevertheless, it has to be said that this reduces the effectiveness of shared micromobility regulations and seriously compromises the safety of its growing number of users.

When it comes to urban mobility in general, and shared micromobility in particular, we need to remember that while regulation involves formal laws, rules, tenders and contracts, space is the 'main regulator'. The way we manage the public right of way, and in particular the way we allocate space and speed between different modes, is arguably the key step for any regulatory action in this area. A lack of consistency between the written rules and the built environment will spell failure.

[25] Naturally, clear communication channels and cooperation with shared micromobility operators also helps developing and implementing regulations.

IV. Cooperation is required across scales and sectors.

Management of public space and of local mobility using that space is usually a core competence of municipalities, and why they assumed a key role in the regulation of shared micromobility in the first place. While this role remains central, important challenges require cooperation with other levels of government [25].

First, with sub-municipal governments, which have their own democratic legitimacy. While municipal authorities manage the core network (major arteries and distributors), these smaller local governments often have power over the lower levels of the road network (e.g. residential streets) and the parking within them. This means that municipalities can provide parking for shared micromobility on the main roads, but parking on lower level streets (needed for proper quantity and distribution) requires approval (or even more, implementation) by these sub-municipal governments. At this scale, however, it can become a triple challenge for them, especially if parking is a source of revenue, residents resent the 'loss' of parking spaces, and they lack the funds or capacity to implement.

Cooperation is also needed at the regional level - with the regional authority, but also with neighbouring municipalities. Car dependency in suburban and peri-urban areas is a major obstacle to sustainable mobility.

Shared micromobility has great potential for transporting passengers to and from public transport corridors, for facilitating trips of up to 5 km within these areas, and even beyond [26]. Making suburban roads safe for bicycles and e-scooters will require action by local governments in areas where many car-dependent voters may resent the reallocation of space and reduction in speed. Regional transport authorities have a key role to play, and integration with public transport at the regional/metropolitan level can be very helpful.

[26] Electric bikes clearly have the capacity to cover longer distances. Hand in hand with long-distance cycling infrastructure (e.g., cycle highways), they can reduce the burden of incoming car commuter traffic. The regional roll-out of Donkey is an excellent example of this, and at the same time an innovative public-private funding partnership.

V. We must put things in perspective.

Proper regulation requires strategic intent, and that in turn requires perspective. Shared micromobility allows new adults entering the mobility market to 'start on the right foot'. For their everyday life in urban areas, shared electric bikes and e-scooters now offer a convenient and affordable alternative to a driving licence and a car.

It has also played an important pioneering role in working with local and regional governments. How many other transport modes or mobility services share data with local authorities? Beyond public transport, very few - and in fact, while data sharing is increasingly becoming a condition for micromobility operators to obtain a licence to operate (and rightly so), public authorities have to pay car manufacturers for access to data from the cars on their roads. The same goes for ensuring that shared e-bikes and e-scooters automatically comply with speed limits and parking regulations: it's high time we seriously considered applying them to motorised traffic.

The rapid growth of individual ownership of electric bikes and especially e-scooters will change the context for regulation. It will be difficult to take e-scooters off the streets, and the same will be true for other individual light electric vehicles, some of which are already on our roads. Enforcement will be a major challenge. Shared micromobility operators may no longer be the sole owners of e-scooters, but they still deploy a critical mass of vehicles and can help shape collective behaviour.

All things considered, the whole process around shared micromobility regulation is, in a way, an illustration of what can happen when a new transport mode arrives to, and strives to grow in, a legacy system of rules and roads, over which the private car still holds a monopoly.

Perhaps the most important question for the future is not how we will continue to regulate these new modes, but how long we will allow this legacy and monopoly to stand. It's not a question of balance - if we want to be climate-neutral, we can't remain transport-neutral.

About POLIS

POLIS is the leading network of European cities and regions advancing transport innovation and sustainable mobility. We cooperate to develop sustainable urban mobility solutions for the city of today and tomorrow. POLIS draws its expertise from a network of decision-makers, researchers, managers and practitioners, working at the local and regional level across the European Union, and beyond.

Building on the results of EU-funded projects and the input of thematic Working Groups that address key transport challenges, we link innovation and public policy guidance on urban and regional mobility with European policy development.

POLIS has a Governance & Innovation Working Group, managed by Pedro Homem de Gouveia, Senior Policy & Project Manager at POLIS.

For information and engagement, write to pgouveia@polisnetwork.eu
For information on POLIS, read more here

AUTHORS:
Pedro Homem de Gouveia
Fanny Boccioli
Dagmara Wrzesińska
Lina Kabbaj
Jorge Manso García

Contact

POLIS
Rue du Trône 98, B-1050
Brussels, Belgium
Tel +32 (0)2 500 56 70
polis@polisnetwork.eu
www.polisnetwork.eu

Pedro Homem de Gouveia
pgouveia@polisnetwork.eu