

# 4G. Measuring Micro-mobility

09:00 AM - 11:15 AM



**Governance & Integration** 









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# Impacts of shared micromobility on the environment in 142 EU cities

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## Background

- Shared micro-mobility system (SMS, e.g., e-scooter, e-bike, bike and e-moped)
- Regarded as low-budget alternative and potential environmentally friendly travel choices
- Prosperous development in EU
- □ Private vehicle alternatives or public transport alternatives?
  - High percentage of replacing walk or transit
- □ Waste of resources or eco-friendly?
  - Life-cycle emission factor is pretty high



#### **Questions**:

- □ Is SMS really sustainable?
- □ What are the hurdles of SMS?
- How to promote the sustainability of SMS?



# High-resolution and systematic assessments

#### Assessment: high resolution framework using big data

#### User and system influences of SMS:

- □ Spatiotemporal usage patterns (e.g., ridership, duration, distance and locations)
- □ Substituted transport modes (large spatiotemporal heterogeneity)
- □ Life-cycle cost and emissions

# Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.g., travel time/cost/emission) Influences = Metrics for same trips (e.

#### **Previous methods:**

- Many qualitative discussions
- Limited surveys to obtain substituted transport modes/usage
- □ Aggregated level analysis

#### Challenges:

- Spatial variation
- Temporal variation
- Individual-to-individual variation

. . . . . .

#### Assessment: high resolution and scalable framework using big data



Endorsed by **six academic publications** for shared mobility in Transportation Research Part A/D, Sustainable Cities and Society (JCR 1 and top journals in transport)

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#### Insights from big data: substitution and emission impacts

- E-scooter sharing systems
- Result in Stockholm, Gothenburg and Malmo
- One year (2022) data from two operators
  - Complete data
  - □ Trip-level inference approach
  - □ High-resolution impact analysis

#### Modal substitution rate

#### 91.34%, 89.75% and 89.2% replace walk, bike or transit

- Modal substitution
- □ Accessibility
- Emission reduction
- Reduced travel time

#### **GHG Emission reduction**

8.6%, 10% and 11% positive impact



6

#### Insights from big data: emission and reducing user travel time

Spatial variation of GHG emission and travel time reduction

# Reduce 6.1 min per trip

Average reduced travel time per trip

All zones positive impact





8.3%, 7.5% and 2.0% positive impact



#### Insights from big data: systematic emission neutral points

GHG emission impacts depends on life-cycle emission factors of e-scooter sharing, usage patterns and substitution to other transport modes



#### **Balance points**

# Insights from big data: Accessibility gains



Public transit VS Public transit+shared e-scooters Accessibility Gains by E-Scooter Combined with Transit Compared to Transit-only 57.8580000 70000 57.8060000 57.7550000Latitude 22.20 40000 57.6530000 57.6020000 10000 57.55

12.0

12.1

12.2

12.3

11.7

11.8

11.9

Accessibility improvement to jobs

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Probability of replacing private cars
6.5% -13.1%
On average 10%.

Probability of replacing ride-hailing

- **D** 0.5% 29.0%
- □ On average 8%
- Poland, Spain, and Slovakia have the highest probabilities.
- Norway has the low probability due to relatively high cost.



Country Level Comparison on Probability of Replacing Car

Probability of replacing walking
19.2% - 46.6%
On average 35.4%

Probability of replacing transit20.7% - 50%On average 38.6%



Country Level Comparison on Probability of Replacing Car

#### GHG reduction per e-scooter trip

- □ -50.7-85.9 eq-*CO*<sub>2</sub>/g
- □ On average, 11.07 g CO<sub>2</sub>-eq
- France, Hungary, Italy, Poland, Slovakia, and Spain have a net GHG reduction.
- For the other 10 countries, overall negative GHG reduction

Reduced travel time per e-scooter trip

- □ 3.1 minutes to 6.4 minutes
- □ On average, 5.2 minutes
- UK, Switzerland, Sweden, Norway, Germany, Finland top in reduced travel time



City level comparison between GHG emission and travel time ٠ reduction

![](_page_12_Figure_3.jpeg)

![](_page_12_Figure_4.jpeg)

-40

-60

#### **Digital tools for systematic performance evaluation of SM for** analyst, planner and manager based on big data

![](_page_13_Figure_1.jpeg)

![](_page_14_Picture_0.jpeg)

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# THANKS FOR YOUR ATTENTION

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![](_page_15_Picture_0.jpeg)

R Baden-Württemberg Ministry of Transport

27-28 NOVEMBER 2024

Bolt

KARLSRUHE (DE)

#### First, mid and last mile

Why shared micromobility is the partner that public transport needs

Haya Douidri Director of Public Policy and Licensing 15.08.2013

![](_page_15_Picture_7.jpeg)

#### **Bolt: Micromobility**

- Part of a multimodal offer consisting of **5** core services
- Operate both scooters and e-bikes in **25+ countries**
- European industry leader operating ~280,000 scooters
- Strong track record across CEE, Baltics, Nordics and Western Europe

![](_page_16_Picture_5.jpeg)

![](_page_16_Picture_6.jpeg)

#### Bolt supports a multimodal transport network

# Public transport

The original form of shared mobility

#### Shared mobility

Strengthening connectivity of the network

Our **micromobility** services are **critical** to this approach

## Public transport in 2024

Public transport is the **original** form of shared mobility and remains the most efficient tool available to cities.

Despite this, only **half** the global population has convenient access to it (75% in Europe and the US, 33% in sub-Saharan Africa)\*

Those with access also face **different availability** throughout the day and week. Public transport often needs to compromise between frequency and coverage, causing gaps and slow services in the network.

\*Shared Mobility's Global Impact - Oliver Wyman Mobility Forum, November 2023

![](_page_18_Picture_5.jpeg)

# Micromobility can provide:

- First and last-mile connectivity; bridging gaps between public transit stops and final destinations.
- **Tailored services** that connect public transport deserts.
- Integrations to public transport apps like Jelbi and Floyo to increase range of services available.

47% of Bolt journeys now **connect** with public transport\* 🚒

\*Internal Bolt Data: 1,400 Scooter rides across 6 markets - Spring 2024

![](_page_19_Picture_6.jpeg)

## The benefits outweigh the challenges

![](_page_20_Picture_1.jpeg)

#### Communities

50% of Bolt Scooter users have made a purchase at local businesses within their last five trips, with 80% making purchases on more than two of those trips.\*

#### Berliners breathe easier as hybrid working cuts exhaust fumes

Number of cars on German capital's roads is 12 per cent lower than before the pandemic — on one commuter route it has dropped 37 per cent in a decade

![](_page_20_Picture_6.jpeg)

#### Consumer

Micromobility supports changing travel habits and reduces the likelihood to own a car. **53%** of Bolt scooter customers now use service to commute.\*

![](_page_20_Picture_9.jpeg)

#### **Modal shift**

Car usage is **down 12%** since 2019 in **Berlin\*\***, a city where micromobility and public transport connectivity on Bolt is noticeably high (above 60%)

\*Bolt Survey - 2740 Scooter users across 14 countries - August 2024 \*\* KCW study for Agora Verkehrswende and the WZB Berlin Social Science Centre

0

#### These impacts are well-known in city centres

![](_page_21_Picture_2.jpeg)

# But we wanted to explore them further

#### We rolled up our sleeves and gathered data

![](_page_22_Picture_1.jpeg)

Study conducted with Wildau University of Applied Sciences to deploy and monitor use of Bolt vehicles in Berlin suburbs over 9 months.

#### Locations

- Erkner
- Lichtenrade
- Zehlendorf

Vehicles

- 50 e-bikes
- 50 e-scooters

#### Data sources

- Usage data
- User surveys
- Expert interviews

#### **Research locations**

![](_page_23_Picture_1.jpeg)

#### Key findings

- **51-67%** of riders used scooters as a first/last mile connection.
- 24-35% did so several times per week.

**Conclusion:** Shared micromobility can expand the reach of public transport.

![](_page_24_Figure_4.jpeg)

![](_page_24_Picture_5.jpeg)

#### **Key findings**

- There was a
   usage peak
   between 1-6am
- This was higher usage than the city centre at that same time

Conclusion: Shared micromobility supplements public transport when service is limited.

![](_page_25_Figure_4.jpeg)

#### **Key findings**

- 60-68% of users said they used micromobility to replace car trips.
- 24-28% did so at least once/week.

**Conclusion:** The combination of the two systems can provide an attractive alternative to cars. 0

![](_page_26_Figure_5.jpeg)

Frequency of usage as alternative to the car

# Recommendations

# Taking it further

- Coordinated deployment: including deployment location and time coordination, supported by incentives for lower demand areas to fill gaps
- Fair fees: link operators' financial contributions directly to infrastructure development or other improvements
- Flexible regulation: the city's goals should shape the form of regulation
- Coordinated planning: micromobility should be included in Sustainable Urban Mobility Plans, with extensive data sharing.

![](_page_28_Picture_5.jpeg)

![](_page_29_Picture_0.jpeg)

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KARLSRUHE (DE)

![](_page_29_Picture_3.jpeg)

Baden-Württemberg Ministry of Transport

![](_page_29_Picture_5.jpeg)

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![](_page_30_Picture_0.jpeg)

# **E-scooters**

#### Shared vs. privately owned, and e-scooter vs. public transport

Nils Fearnley naf@toi.no Espen Johnsson ejo@toi.no Institute of Transport Economics, Norway

![](_page_31_Picture_0.jpeg)

# Does e-scooter ownership matter?

![](_page_31_Picture_2.jpeg)

#### Shared vs. privately owned

- . Assumed 20:1 private:shared e-scooters in Norway
  - ~500 000 private
  - ~ ~25 000 shared
- . All existing knowledge relates to shared e-scooters
- Data analysed: Annual national e-scooter surveys 2019-23
  - 6045 unique e-scooter users

![](_page_32_Picture_7.jpeg)

#### Most recent trip

	Shared e-scooter	Private e-scooter
• Male	59 %	64 %
<ul> <li>Used in rural area</li> </ul>	1 %	16 %
<ul> <li>To/from school/work</li> </ul>	47 %	36 %
<ul> <li>Used helmet</li> </ul>	7 %	41 %
<ul> <li>Replaced car</li> </ul>	12 %	29 %
<ul> <li>Replaced w/c</li> </ul>	55 %	39 %
<ul> <li>Replaced PT</li> </ul>	31 %	25 %

![](_page_33_Picture_2.jpeg)

# Does access to e-scooters change the need for a car for you or your household?

![](_page_34_Figure_1.jpeg)

![](_page_34_Picture_2.jpeg)

# tøri

# Conclusions

- . Ownership matters
- Private e-scooters replace more car trips and more car ownership
- . Helmet use higher on private
  - Yet most fatal accidents with private


## Public transport vs. e-scooter



#### **Material and Methods**

- . Trip data observation data.
  - Core dataset 130,698 e-scooter trips from June 2021. (exact time, location, distance travelled, and time elapsed)
- . Open Trip Planner and GTFS file for Oslo
  - Hypothetical walk, bike and PT trips generated based on actual scoter rides
- User survey (Oct- Nov 2021, Oslo only N=1921, five companies)
- MIS continuous market information survey conducted by the PTA





- Trips, roughly half of the e-scooter trips were geographically parallel to PT
- In only 42.7 % of the cases were there an PT alternative to the e-scooter trip in question
- Probability of having a PT alternative increased in weekends, with distance, with nearness to PTstops and decreased by night

#### E-scooters much faster than PT





Ride distance (meters, binned)

# Ride distance histogram vs PT alternative or not





#### Accumulated rides by length

• Over 92 % of rides are competetive vs PT





#### More direct rides during morning rush

• Faster rides with less deviation from the optimal route



Ride speed vs ride distance/optimal route relationship





## Road segment utilization

Mean distance to PT stops from the start for these e-scooter rides:

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- Bus 120m.
- Tram 326m.
- Metro 683m.
- Train 953m.



#### Fraction of rides whitout PT alternative

- Ride start per 50m hexagon
- Cut: >25 rides per hexagon
- Mostly inside the "central zone"





#### Usage overview from survey

- . Scooters used as main transport mode
  - To some extent used for access/egress for bus, metro and train
  - for the whole trip
  - Users say PT could substitute e-scooters on 25-40% of trips where e-scooters are the main mode of transport.



#### Conclusions

- Both compete with and complement PT
- Where e-scooters are chosen over PT, they offer a much better service in terms of relative travel times
- 20 percent of e-scooter trips are made in combination with PT
  - Usually with PT being the main mode of transport
- E-scooters are welfare increasing – and serve (geographic and demographic) segments that are difficult to target by PT





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**Baden-Württemberg Ministry of Transport** 



# Learnings from the shared micromobility sector

A blueprint for public-private integration?

November 28th 2024



### What is a shared micromobility service?







#### Asset heavy

### Ops-focussed

Low margin

# 💡 Just like public transport 踝

### We've seen different waves of shared micromobility services in cities



## 2000s

Private investments by advertising companies



## ~2010-

Public investments by cities and PTAs in equipment and services



### 2017-

Private investments by new mobility operators

### Today we see a mix of all these services in our cities

MARKET EVOLUTION

### **Great for users:**

- More choices
- More available vehicles
- Much improved UX

### **Great for cities:**

- More services for same public budgets
- Amplified public transport systems

**Source:** Fluctuo (2024) EU Shared Mobility Barometer MARKET EVOLUTION 2020-2023

EU27 + UK, NORWAY & SWITZERLAND



MODAL BREAKDOWN (2023)



<sup>(1)</sup> Average (+/-10% variation due to seasonality) <sup>(2)</sup> VAT included

Annual Review 202355

### But the current governance for shared micromobility limits success









### Discriminating practices

### Lengthy and inefficient tender procedures

# Local fragmentation

### B2C services started on a wrong foot

### **Ingredients of failure:**

- Very aggressive deployments by Uber-like startups
- Billions of venture capital money
- Unproven technology
- Inferior vehicles
- No regulation
- Platform approach relying on the gig economy





# Things have changed, and in 2024 the industry is at a crossroad



# No more private money



# **Proven user Love**







**400M+ rides** / year<sup>(1)</sup>

### 40M+ riders / year<sup>(1)</sup>

**90% positive** user rating<sup>(2)</sup>

<sup>(1)</sup> aggregated dockless bike and scooter trips in Europe based on Fluctuo 2024 <sup>(2)</sup> TIER-Dott data, end-of-ride rating by users

# **Better vehicles & tech**







5+ years lifespan

### Mature geolocation technology

### Built for Purpose

# **Better regulation**







**Traffic laws** 

# Speed calming measures

# Licences & tenders

# **Better infrastructure**







### Dedicated parking areas

# Use existing bike racks

### More and safer bike lanes

# Reassuring safety data<sup>(1)</sup>

# -44% -26% 3.3

Accident rates '23 vs '22 Casualty risk

Injuries/Mio km (3.9 for shared e-bikes)

<sup>(1)</sup> OECD-ITF (2024), based on MMfE data, validated by NTUA

### At TIER-Dott, we're writing a new chapter, building a European Champion for shared mobility

#### **Company mission:**

# Change mobility for good, together

#### What it means for cities:

#### TIER-Dott is the responsible

**city partner**, amplifying public transportation with local micro mobility solutions, well integrated in your city.

**Our service:** Safe, Useful, Sustainable, with a unique approach to parking management.

**Working together with cities:** responsible solutions, pro-active regulation, acting transparently

### A good partnership model is based on cities' and shared mobility operators' aligned visions







Decarbonising the transport system

Reducing car dependency & modal split Affordable and accessible for everyone

### A new governance approach is needed







Focus on the outcome, not the inputs

Create a coherent policy framework for all services Incentivise positive outcomes

# Thank You!

Sebastian Schlebusch Head of Market Development sebastian.schlebusch@ridedot\com





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### ARTHUR



# Are micro- and shared- mobility solutions contributing to improving the mobility system?

28 November 2024

Vadim Panarin, Arthur D. Little

### The presentation is based on findings from the fifth edition of our Future of Mobility study





### By New Mobility, we mean Micromobility, Shared, and Ondemand services



# Today's presentation consists of 3 parts





ARTHURELITTLE









CONTEXT

# Overall, volumes in key New Mobility segments continue to grow



POLIS

Source: Flucto European Shared Mobility Annual Review (2023), Statista (2023)

#### ARTHURELITTLE
### New Mobility services remain a small phenomenon, accounting for only about 3% of the shared mobility modal split





Sources: PT – UITP, Shared scooters, bikes, cars, mopeds – Shared Mobility Index, Ride-hailing - estimation **ARTHUR PLITTLE** 









### In this context, coming to the main question







### In this context, coming to the main question

Are New mobility solutions contributing to improving the mobility system?

Proxy



To what extent do they impact the decision to keep or give up a personal car?



#### ARTHURELITTLE

### We asked people across the globe would they consider giving up their own cars given transport services available today





#### ARTHUR

### Among major economies, China has the biggest and growing share of citizens that may consider demotorizing



POLIS CITIES AND REGIONS FOR TRANSPORT INNOVATION Source: ADL Future of Mobility Worldwide study 2023 Note: Global and European values weighted by population of markets included

Would not give up own car **ARTHUR** 

### Next, we focused specifically on New Mobility in large European cities



**ARTHUR** LITTLE



### Car-sharing and ride-sharing seem to be superior in terms of their impact on people's readiness to give up personal car



**ARTHUR** LITTLE



### Usage of multiple New Mobility services positively impacts Readiness to give up personal car



ARTHUR











### **Implications & Recommendations**

New Mobility has its role to play in improving the modal split and is an important part of the solution to current mobility issues

Transport authorities should cultivate new mobility as part of their menu and foster partnerships with new MSPs by



Carefully calibrating support structures for different mobility options (not only bike sharing)

Taking a greater interest in "ecosystem play" (not only focus on regulating)

Operators should position themselves as team players in the mobility ecosystem:



Collaborating with transport authorities to codesign innovative support mechanisms (e.g., micro-subsidies)



Integrating as much as possible with public transport and other transportation modes, (via mobility hubs, MaaS)





### ARTHUR



# Thank you for your attention!





#### 27-28 NOVEMBER 2024

**KARLSRUHE (DE)** 

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**Baden-Württemberg Ministry of Transport** 





### Shared bicycles: Why and how?

Lessons from 9 use cases 8 European cities 27-11-2024 9.00 – 11.15

Bruno Van Zeebroeck - Transport & Mobility Leuven Benoit Beroud - Mobiped





### Should Brussels Region reinvest in a public shared bicycle system in 2026?

Figure 7: Trips/contractually stipulated bike/day in 20 European cities in 11 countries in 2022







Selection of 6 out of all cities with more than 1000 bicycles shared bicycle systems

#### ╋

2 Long term rental systems





### Why, What's your objective?

- If a public authority would invest in a public bicycle sharing system, what would be the most reasonable objective (valuable and reachable)?
  - Modal shift away from car
  - Bicycle accessible for everybody
  - Develop multimodal practices
  - Stronger Public Transport
  - Get cycle dynamics starting off
  - Make (shared) bicycles visible and a topic of discussion





### Why, What's your objective?

• If a public authority would invest in a public bicycle sharing system, what would be a reasonable objective?

Potential objective		Fact check	Effective mean
Modal shift away from car	$\overline{\bigcirc}$	Neglectable carkm avoided, slight impact on car possession	Change space allocation
Bicycle accessible for everybody	$\overline{\mathbf{O}}$	Access in theory - if payment procedure allows In practice mainly higher educated (male) users	Targeted actions-coaching Safe cycling conditions
Develop multimodal practices	☺ ☺	Yes, for users	
Stronger Public Transport	•	Yes, parallel -complementary *Shared bicycle = 1% of PT trips	Most effective?
Get cycle dynamics starting off	$\bigcirc$	Yes, Paris start, high share of public bicycles - 40%- among cyclists	Most effective?
Make (shared) bicycles a positive political topic of discussion	$\odot$	YES, visible and easy Difficult to withdraw	

### What's your objective? Lessons learned

- System objectives are monitored
  - Cycle use turnover
  - Cycle availability
  - ...

 Mobility objectives not clear/monitored





@Mobiped 2024

## What's your budget?

*Figure 37: Regional cycling budget versus bicycle trips* 

### Brussels expected PB budget

- Enormous compared to bicycle budget
- Peanuts compared to car
- Peanuts compared to Public Transport

Cycling policy 2030 (€ 2023) 2022 Annual budget 8% 46% 46% **Bicycle trips** 95% 1.5% 3.5% 2030

LTR

PB

*Figure 38: Regional mobility budget share in 2022* 

LTR 💑 3 M€ Average annual estimates in 2030, without user PB ക 16 M€ revenues (€ 2023) 2022 annual budget Cycling policy 3 16 M€ Road network 📾 184 M € Public Transport 🗔 1.115



### You go for PB! (objectives and € are fine) Pay attention to the enablers

- Public service
- Dense network
- Quality bicycle (electric)
- Engaged provider/operator with sufficient resources
- Station based
- Easy going client experience
- Visible identity
- Transition management
- Monitor the system



## Public System

- Long Term presence guaranteed
- Solid transparent financing
  - Avoid publicity
- (Subsidized) Private systems:
  - cheaper,
  - no long-term guarantee





### **Dense network**





Figure 10: 150 m (white) and 300 m (blue) catchment areas around PB stations - Single map scale



5 10 15 20 km

# A quality bicycle

- A quality bicycle
- Probably Electric
  - Gamechanger
  - (no mix)
- Well maintained (resources)





### Engaged provider – sufficient budget

- Engaged provider with sufficient budget
  - Thinking bicycle, not publicity
- Competitive procedure risk
  - Promised more than feasible
  - Marseille Paris -Antwerp region







### **Charging station based**

- Large majority of stations charging
- \*\*Free floating
  - Battery swap higher operational cost
  - Hard to respect drop zones public space disorder





## Easy going

• Apps

- Payment systems?
- Inclusive?

	Pour les usages occasionnels V-LIBRE O€/mois		Pour les usages réguliers en Vélib' mécanique V-PLUS 3,10€/meis en tarif standard		Pour les usages réguliers en Vélib' électrique V-MAX 9,30 € / mois en tarif standard	
MÉCANIQUE						
	0-30 min 1€	au-delā 1€/30 min	0-30 min gratuit	au-delà 1€/30 min	0-60 min gratuit	au-delà 1€/30 min
TRIQUE	0-45 min 3€	au-delā 2€/30 min	0-45 min 2€	<b>au-delà</b> 2€/30 min	0-45 min 2 premiers trajets gratuits par jour puis 26/trajet à partir du 3* trajet journalier (45 minutes)	au-delà 2€/30 min

ABONNEMENTS LONGUE DURÉE - GRILLE TARIFAIRE VÉLIB' MÉTROPOLE APPLICABLE À PARTIR DU 14 MAI 2023

#### PRICING

One trip: single rate | Subscription: full rate or solidarity rate Usage:  $0 \in \text{for } 30/60 \min + ... \in /h | Pre-authorised debit: ... \in$ 





# Visibility - Identity





### **Transition management**

- Take enough time
  - Paris

- Marseille
- Madrid
- Antwerp Region





### Monitor the system

	Figure	13: Categories of Key Performance Indicators (KPIs)	
Topic	Туре	Purpose	
Public policies	KPI	Translate the public investment political ambition, with a view to evaluating and improving public policy.	
Contractual	KPI	Incentivise the delivery of a high-performance service by distinguishing between resources/results and penalties/remuneration to specify the amounts paid. They are extremely precise, limited in number and can have an indirect impact on other sub-indicators. They can be discussed with candidates during the selection process.	
Quality of service	PI	Improve user satisfaction and the service's image. These criteria can be ranked in order of perceived service quality.	
Knowledge	PI	Conduct studies to understand how the service works.	
Communication	$\mathbf{PI}$	Communicate with the public.	



### Inform you 🙂

Lots of documents available

https://www.mobiped.com/en/refere nces/fiches missions/future-of-thebrussels-public-bicycles-service/

https://mobilitemobiliteit.brussels/en/news/whichfuture-for-bike-sharing-in-brussels

https://www.tmleuven.be/en/project/ Benchmarkingsharedbikes

#### THE VILLO! BRUSSELS' PUBLIC BICYCLES SERVICE ENDS IN 2026. WHAT'S NEXT?

AN APPLIED-RESEARCH BENCHMARK, OPPORTUNITY AND FEASIBILITY STUDY

#### "An outstanding must-read study

Peter DALOS Directorate Advisor I BKK Centre for Budapest Transport



Matthieu FIERLING Study & expertise manager SAVM | Paris Vélib' Authority



#### SEMANTICS Access to a bike

Public bicycles | Private shared e-bikes Charging | Parking

PERFORMANCE COMPARISON Cycling | Public bicycles | Public transport E-bikes | Pedal bikes Free-floating | Dockbased | e-scooters

END-USERS PERSPECTIVES Target groups unable to access a bicycle Design for All approach Integration within public transport

#### BUDGET

Carbon footprint | Societal balance sheet Financial ratios Modal comparison

#### SCENARIO PROSPECTION

Long-term rental | Bike sharing Private e-shared bikes | Public Bicycles Dropzones | Charging docking station

#### GOVERNANCE

Public service criteria | Market failures Public objectives | Contractual KPIs Public transport operator implication

#### SHARED BIKES MARKET TRENDS 78 p

100+ players talks: experts, cities, providers 50+ litterature review 30+ cities visited in 9 European countries

В **PUBLIC BICYCLES INTERNATIONAL BENCHMARK 88 p** 20 EU cities overview

7 public bicycles services benchmarked Antwerpen City | Antwerpen Region | Brussels Budapest | Madrid | Marseille | Paris 2 long-term cycle rental focused Ghent | Paris Region

#### ( C ) **ASSESSMENT, SCENARIOS & RECOMMENDATIONS 122 p**

5 scenarios exploration 7P user-oriented marketing mix 3 public transport operator implication options

Ø SYNTHESIS 30 p

Seperated reports https://mobilite-mobiliteit.brus-sels/en/news/which-future-for-bike-sharing-in-brussels

Compiled report https://www.mobiped.com/en/references/fiches\_missions/future-of-the-brussels-public-bicycles-service/







European Union

NextGenerationEL









# Thank you for your attention!



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#### 27-28 NOVEMBER 2024

KARLSRUHE (DE)





Baden-Württemberg Ministry of Transport





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### Why do e-scooter riders ride on pavements? The role of Computer Vision to help cities better understand the rider-infrastructure gap

Andrew Fleury, CEO & Co-Founder, Luna Systems





### ERRANT RIDER BEHAVIORS CONTINUE TO POSE A SIGNIFICANT CHALLENGE







### Sidewalk riding

### **Disorderly parking**

#### Collisions





Micromobility's seat belt moment.
## WHAT AI CAN "SEE"



#### Pedestrian count & speed



Privacy by design- Facial & license plate blurring

Location data



#### POLIS ANNUAL CONFERENCE 2024

## **1. HOW THIS DATA HELPS OPERATORS**

#### The key metrics:

1.Location & duration2.Speed3.Number of pedestrians

#### COMPLETE ACTIONABLE DATA

#### VISUAL CONFIRMATION

**CONFIDENT ENGAGEMENT WITH RIDERS ABOUT THEIR CHOICES...** 





## **2. HOW THIS DATA CAN HELP CITIES**





City analysis of sidewalk riding

# dott

# WE ANALYSED FIVE CITIES: GRENOBLE, LYON, BRUSSELS, TEL AIV, LONDON

## SCOOTERS SPEND MOST OF THE TIME ON THE CORRECT LANE TYPE



## **CITY COMPARISONS**

## Frequency of sidewalk riding events per city analysed to date



Number of events per ride

## WHERE IT HAPPENS MOST FREQUENTL

Ye pinpointed every sidewalk riding event, mapping them by:

location
root cause
speed





## THE CAUSES OF SIDEWALK RIDING: INFRASTRUCTURE VERSUS "RIDER CHOICE"



## DEEP DIVE OF INFRASTRUCTURE ROOT



## **KEY TAKEAWAYS**

Uno

1. Sidewalk riding - strongly related to infrastructure.

2. Computer vision helps cities determine where risk hotspots are located and why.

3. When infraction is rider-led communication, mitigation is possible with data & visual proof.

4. Computer vision can provide a bridge between operators & cities in the conversation on safety.

5. Unlocks a privacy-sensitive, crowd-sourced vision data source for cities for infrastructure planning, smart city use cases.





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## THANK YOU

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## Shared Micro Mobility: The correlation between good parking behaviour and new shared micro mobility infrastructure 09:00 AM - 11:15 AM 28 November 2024

Anna Montasser, Lime Michael Wenzl, City of Munich

# The challenge of ensuring good parking behaviour







## Research

Shared Scooter Parking: The Role of Parking Density and Land Use in Compliance and Demand

Sian Meng - Urbanism Next/University of Oregon Prof. Anne Brown - Urbanism Next/University of Oregon Prof. Nicholas Klein - Cornell University Dr. Calvin Thigpen - Lime Brandon Haydu - Lime







## Provide sufficient parking density



25 corrals/km2 or a 1 minute walk.







## **Examples:**



Berlin, Germany





**Brussels**, Belgium

Rotterdam, NL



## Improvement of the parking situation in Munich: Parking Spaces and Geofencing





## **Old town scooter parking**

GEO PORTAL MÜNCHEN Open Geodata



Parking spaces and virtual no-parking zone in Munich's historic city centre

#### **Problems**

- Old town area with many conflicts of use due to heavy pedestrian traffic
- chaotic parking of e-scooters

#### Measures

- Identification of problems with a heat map on parking and tracking of citizen complaints
- Creation of 40 parking spaces through rededication of car parking spaces
- No parking zone within the old town via geofencing



## **Old town scooter parking**



Source: City of Munich / Department of Mobility

#### Effects of the measures

- Improved road safety thanks to better parking facilities
- Well accepted by users, tradespeople and local politicians
- Significantly fewer complaints from neighbours
- Scientific survey shows public acceptance
   <u>https://muenchenunterwegs.de/news/e-</u>
   <u>tretroller-abstellflaechen-umfrage-bestaetigt-akzeptanz</u>





## Improvement of the parking situation



E-scooter parking processes 2021



E-scooter parking processes 2023



## **Next steps and Goals**



#### Next steps

- City-wide expansion of 675 parking spaces for micromobility by 2026
- No-parking zones with geofencing around the parking spaces

#### Goals

- Improving the parking situation
- Promoting road safety, especially for pedestrians
- Increasing public acceptance of micromobility



## **Parking Spaces for Micromobility– Examples**

**Briennerstraße** 





Westenriederstraße ost

#### Westenriederstraße west





Source: City of Munich / Department of Construction





# Thank you for your attention!





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**Baden-Württemberg Ministry of Transport** 



Polis Conference 2024

## ParkedByMe Revolutionising micromobility through correct parking

Welmoed Neijmeijer, on behalf of:



**Co-owned by** 





28-11-2024

## **About SparkPark**



#### SparkPark's **mission** is to:

Enhance the liveability of urban spaces. We want to create a Happy City® where resources and space are shared, and safety and sustainability are prioritized.

How do we do this?

- Addressing the "last mile" of a shared mobility journey
- Happy City, <sup>®</sup> our patented and reliable digital parking system

# Let's talk about the elephant in the room



Foto: Boris Buchholz





## Empowering shared micromobility for safer cities

#### **Features:**

- **Turn-key solution** from installation to maintenance to monitoring (PAAS)
- Bluetooth technology compatible with all existing fleets
- Centimeter-level precision
- High autonomy battery & charging with **solar panel**
- Wireless, LTE connection to the cloud-based system
- No installation on the ground is required
- Simple API system integration



Happy City<sup>®</sup> installed in Madrid

## ParkedByMe: Madrid (ES)

#### Facts

- 25 locations in the city center
- Duration: 12 months
  - 4 weeks testing
- Alignment with Madrid 360 strategy
- Our partners:
  - Madrid City Council
  - Factual Consulting

#### What went well?

- Building relationship with the city
- Initial positive response from Dott-Tier
- Interest from BiciMAD

#### Learnings

- Placement of sensors without poles present
- Operators not inclined to cooperate



#### Madrid moves to ban app-rented escooters over safety concerns

Lime, Dott and Tier Mobility licences to be cancelled from October due to issues with circulation and parking



## ParkedByMe: Prague (CZ)

#### Facts

- 25 locations in the city center
  - 989 parking actions
- Duration: 12 months
  - Testing with operator: 4 weeks
- Our partners:
  - City of Prague (Prague 7)
  - PowerHUB

#### What went well?

- Installation and calibration sensors
- Integration #KolemPlzn, local bikeshare operator
- Testing led to deployment of 12m wide parking spot

#### Learnings

 Local operators not inclined to cooperate







## ParkedByMe: Prague (CZ) - data

Comparison of Bluetooth vs. GPS positioning accuracy in parking of shared bicycles – Preliminary Results from Selected Days

Date	Number of rides	SparkPark Bluetooth	GPS parking success
		parking success rate	rate
23 October	24	98.5 %	63.5 %
31 October	18	100 %	<b>67</b> %
6 November	24	100 %	30 %

#### 43-52%

of local operators' vehicles are

parked outside designated areas

## Warsaw (PL)

#### Large-scale roll-out of SparkPark Happy City

- 20 parking locations installed
- Ramp up to 350 parking locations in Q1 '25
- Together with NextBike
- Objective of the cooperation:
  - Correct and safe parking
  - Side-benefit: more efficient operations



## Conclusion

1. HappyCity ensures that micromobility vehicles are **parked in** dedicated parking bays 98.5% of the time.

**2. Cooperation** between different actors is key to create a flourishing **sustainable transport ecosystem**. Cities need support from all parties to realise this.

**3.** When creating **local regulations**, cities need to include **provisions on cooperation** with third party service providers selected by the city.

# QUESTIONS?

Reach out to: post@sparkpark.no

Visit our webpage: https://www.sparkpark.no

and let's connect on LinkedIn!