THE VIEW OF PEOPLE WITH DISABILITIES ON BIKE SHARING

Insights and recommendations from a European study

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Bike sharing

- The bike sharing market has developed fast over the past years and emerged as one of the fastest growing transportation services in many cities (Shaheen, 2020)
- However, mostly classical adult bikes are used and the diversity of the bike market (cargo, trikes, handbikes, etc.) is not reflected in bike sharing schemes
- As bike sharing evolves, there is a need for new models that serve a wider variety of people
- One in four EU citizen report a long-term disability, characterized by limitations in performing everyday activities for a period of six months or longer (Eurostat, 2018)

Source: @DLR

Bike sharing should be **adapted to more users and more usage!**

It’s not just about the bike itself, but also about the technology behind

- A lot of newly developing services are based on digital technologies when it comes to route planning, booking, paying etc.
- This can be a barrier for less tech-savvy users, people with a lack of physical or sensory skills or those who do not have access to mobile devices (digital divide).

Source: @DLR

The Horizon2020 project *TRIPS*

- TRIPS (TRansport Innovation for vulnerable-to-exclusion People needs Satisfaction)
- Funded for 3 years by the EU Horizon 2020 (02/20 – 01/23)
- Key objective: Understand disabled citizens' mobility needs, mobility barriers, and attitudes towards future mobility solutions

11 partners

7 cities

This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme Under Grant Agreement no. 875588.

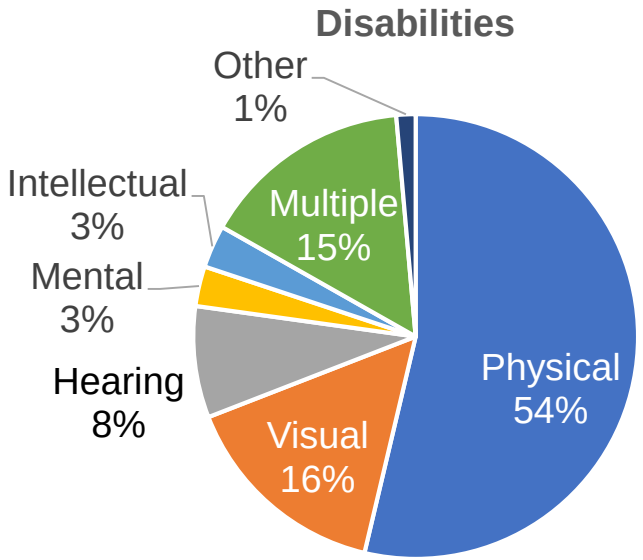
Ability analysis of bike sharing

Preparation		
	Booking (and paying)	Cognitive Ability	C - Ability to decide on a service provider
			C - Ability to read / write (literacy)
			C - Ability to understand fare system
			C - Ability to use a mobile app or a booking engine
			C - Ability to use a phone
			C - Contractual capability
		Sensory ability	S - Ability to see
			S - Ability to hear
			S - Ability to feel (tactile information, Braille, etc.)
			S - Ability to speak (alternatively: written or sign language)
			S - Ability to use a mobile app or a booking engine
			S - Ability to use a phone
		Other preconditions	O - Affinity to use pay system (e.g. credit card, online payment)
			O - Affinity to use a mobile app or a booking engine
			O - Affinity to use a phone
			O - (Safe) Internet access

- Find more information in: Repetto et al. 2020

TRIPS mobility survey

- Available in 15 languages during winter 2020/21 and summer 2022
- Addressed topics:
  - Local transport quality and effects of COVID-19 pandemic
  - Assessment and use intention of seven emerging transport services and technologies
  - Suggestions for improvements: “What would you need to make this system work for you?”
- Sample:
  - N = 799 with disabilities from 21 European countries
  - 46% female participants
  - Mean age: 46.4 years (*SD* = 15.7)



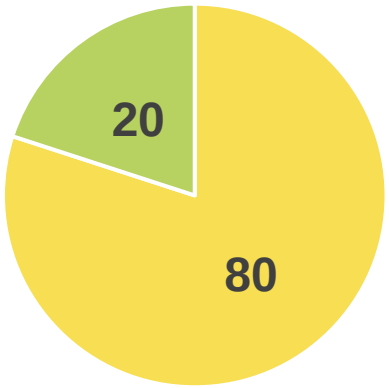
Around 10% of people with impairments could not use cars

Around 30% could not use bikes

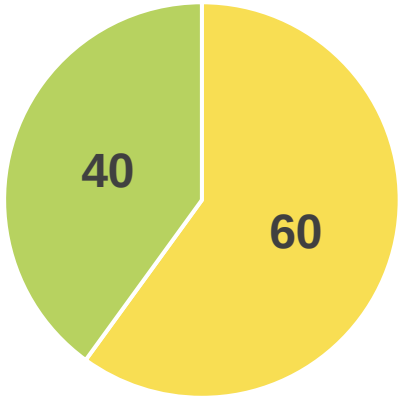
Around 10% of people with impairments could not use cars

Around 30% could not use bikes

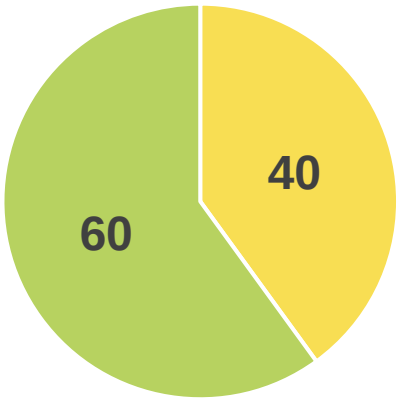
Physical impairment



Mental health issues



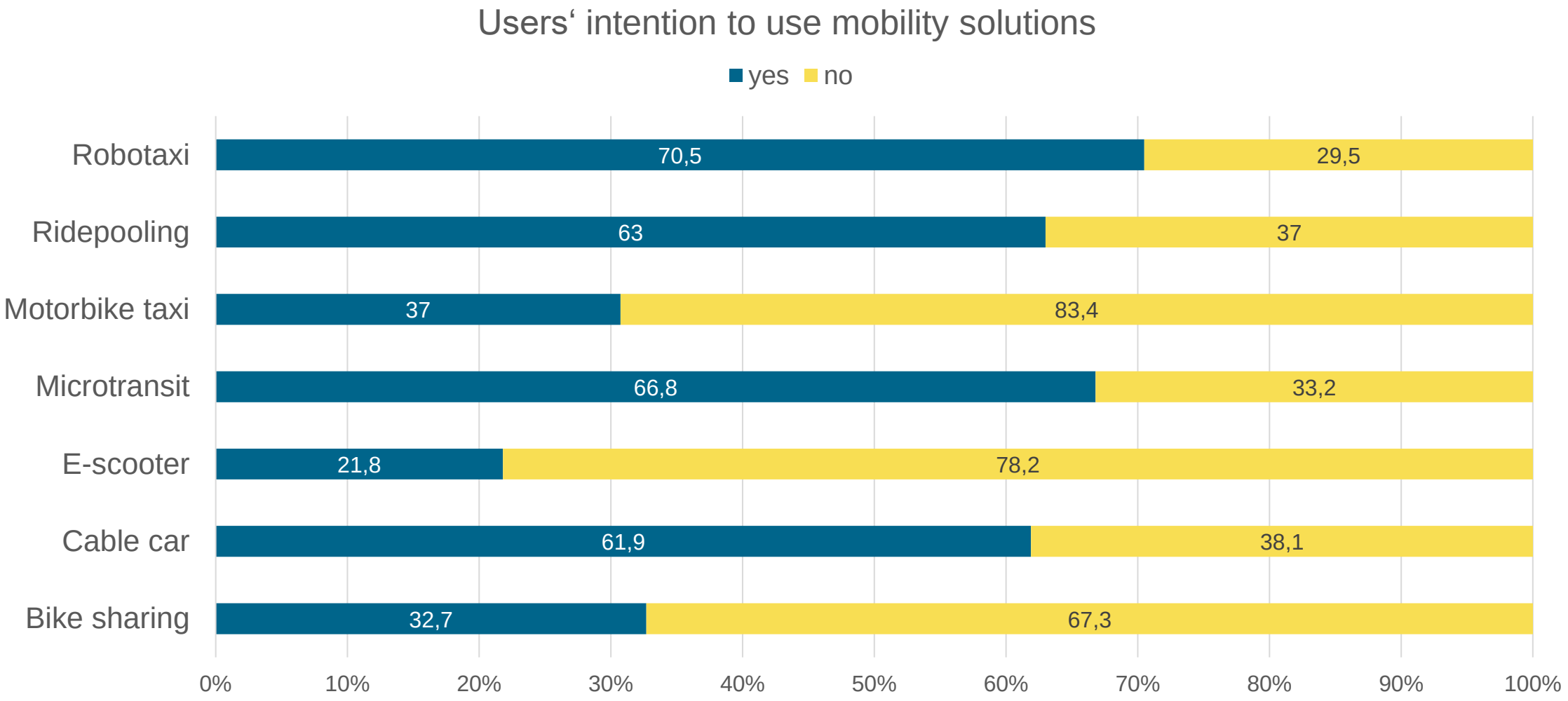
Hearing impairment



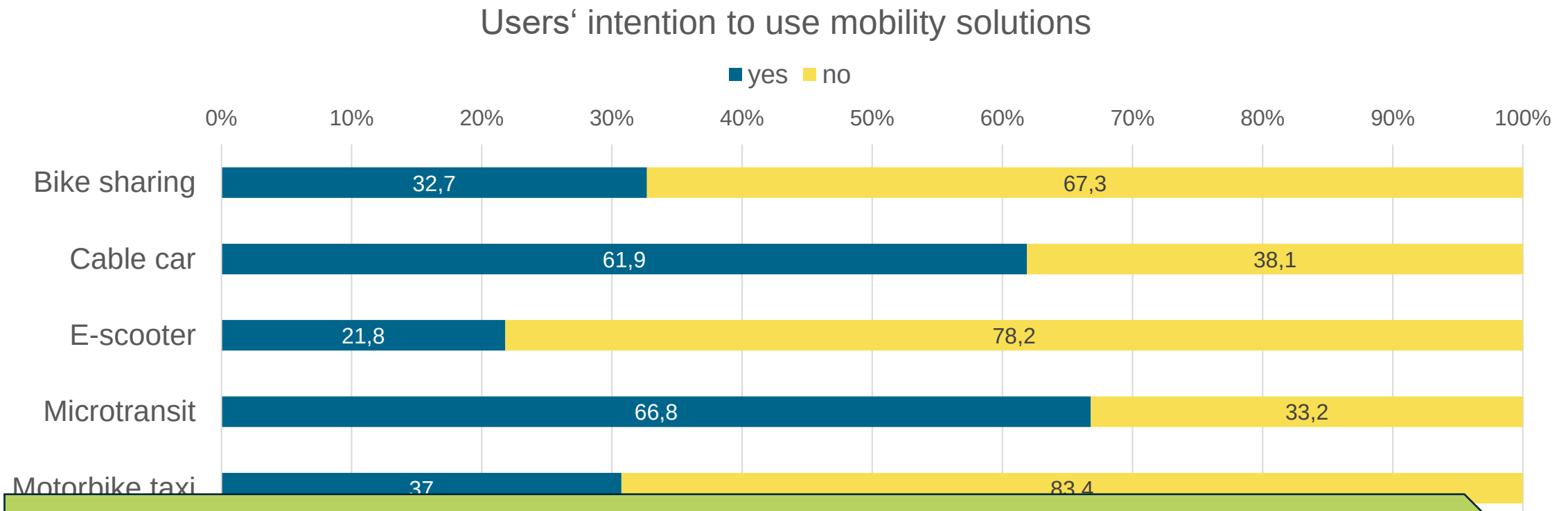
used it

could not or did not want to use it

Findings


Users‘ intention to use mobility solutions
yes
no
Robotaxi
70,5
29,5
Ridepooling
63
37
Motorbike taxi
37
83,4
Microtransit
66,8
33,2
E-scooter
21,8
78,2
Cable car
61,9
38,1
Bike sharing
32,7
67,3
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%

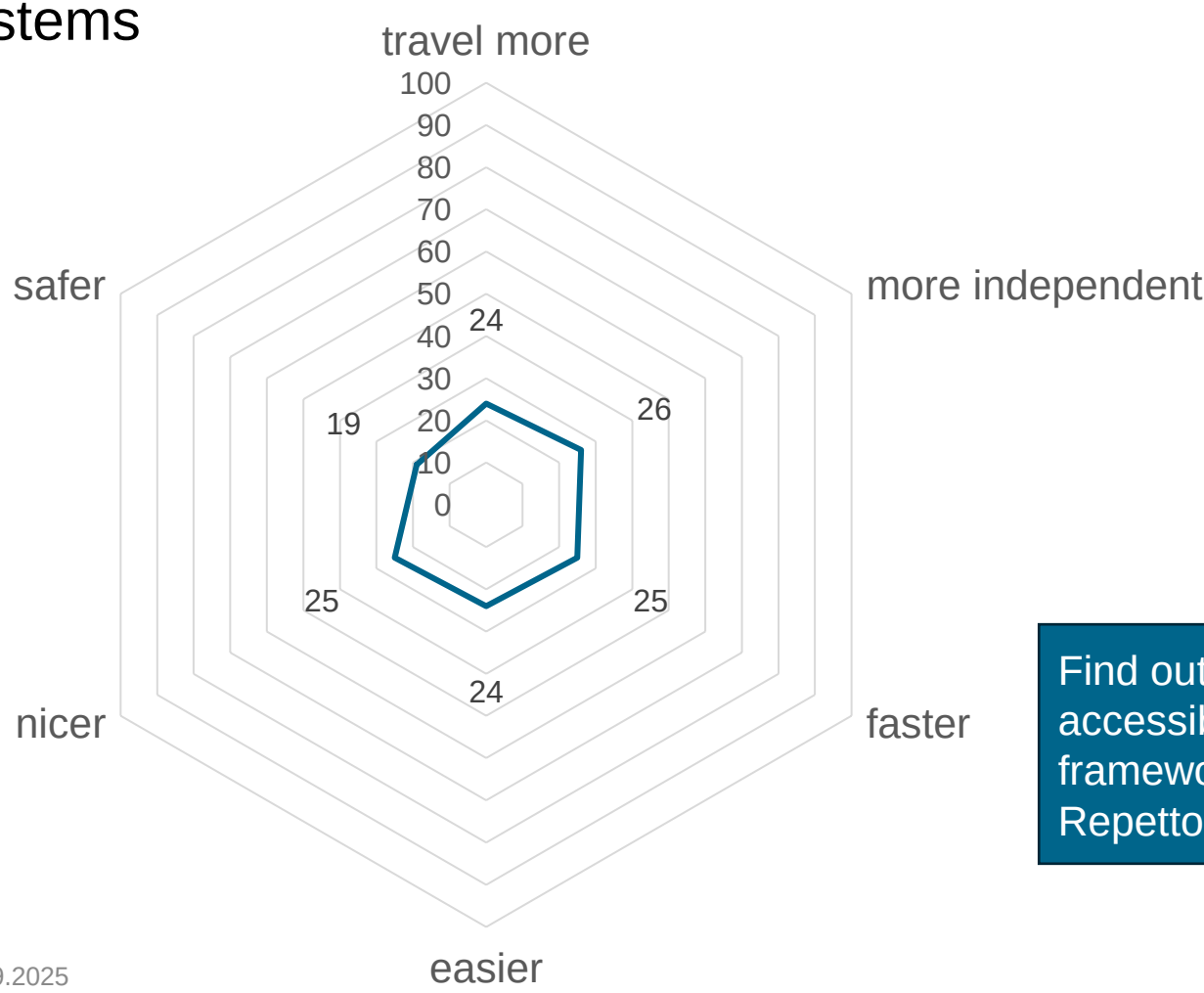
Findings



Intention to use for shared mobility systems was rather low, especially for two-wheelers and self-controlled means, such as bike sharing (Goralzik, König, Alčiauskaitė & Hatzakis, 2021)

Users‘ assessment of bike sharing

Share of respondents answering `yes´or `quite a bit´ regarding six dimensions of *Mobility Divide Index (MDI)* as a methodology designed to assess the accessibility level of public transport systems



Find out more about accessibility evaluation framework *MDI:* Repetto et al. (2021)

Recap

People with access needs due to disabilities mostly did not want to use bike sharing systems and did not recognise their advantages for themselves

So, what to do about it?

Respondents‘ recommendations

- “What would you need to make this system work for you?”
- Qualitative content analysis of answers (Mayring, 2004)
- Some people gave cynical answers such as: *“another pair of eyes*”
- Despite the unpopularity of bike sharing, people had many ideas of how to adapt the system to their access needs
- There were also practical suggestions clustered into seven categories

Source: @DLR

Respondents‘ recommendations

That it would help me to keep my balance. (Spain, multiple impairments)

A self-drive electric bike (Belgium, multiple impairments)

For those with visual impairments, tandems would be ideal—the sighted companion rides in front, and the visually impaired person sits in the back (Ireland, visual impairment)

That it was really on the road or specific lanes and not (as it happens now) on the sidewalk. (Spain, multiple impairments)

There needs to be assurance that they would NEVER be left blocking pavements. …. They make our lives MUCH harder just by existing. (United Kingdom, multiple impairments)

Respondents‘ recommendations

Cycling is my favourite and most accessible and fun mode of transport. With fully accessible bike-share (including access to trikes/handbikes/tandems/etc.), cycle-share would be extremely useful for me, in places where I can't take my own clip-on handcycle. I don't expect to find handcycles/trikes at every street corner, but any bike-share system should have an available phone line through which a disabled person can have an appropriate cycle for provided (at the same price as other bike share users). (Ireland, physical impairment)

Vehicle design	Service design	Human-machine-interaction	Social awareness	Policy measures and regulations	Infrastructure measures	Safety
• tricycles, four-wheelers, tandem, handbikes • electric support • adjustable steering wheel • handle for a tens for ev wheelchair type • autonomous driving bikes • compatibility with electric wheelchair	• environ-ment monitoring and warning • free-floating service • alternative instructions for use • proximity and denser network	• app without foreign words • app accessible to screen readers • locatability of virtual stops registration	• education of public with regard to consi-derate driving	• bikeshare docking stations meet ADA requirements • avoidance of various offices	• dedicated bike lanes • bigger bicycle parking spaces for tandems etc. • removal of architectural barriers	• electronic navigation system that brakes when necessary • safe storage vandalism

Most of the suggestions for improvements, such as separate infrastructure, would also benefit people without disabilities.

Best Practice Example 1
Project Pedder in Bremen

Side-by-side tandem

esp. for visually impaired

Wheelchair transport bike

OPair wheelchair bicycle

Source: [1]

Best Practice Example 2
Adaptive Biketown in Portland

Source: [2]

Summary

Bike sharing in it’s current form is not accessible for people with disabilities.

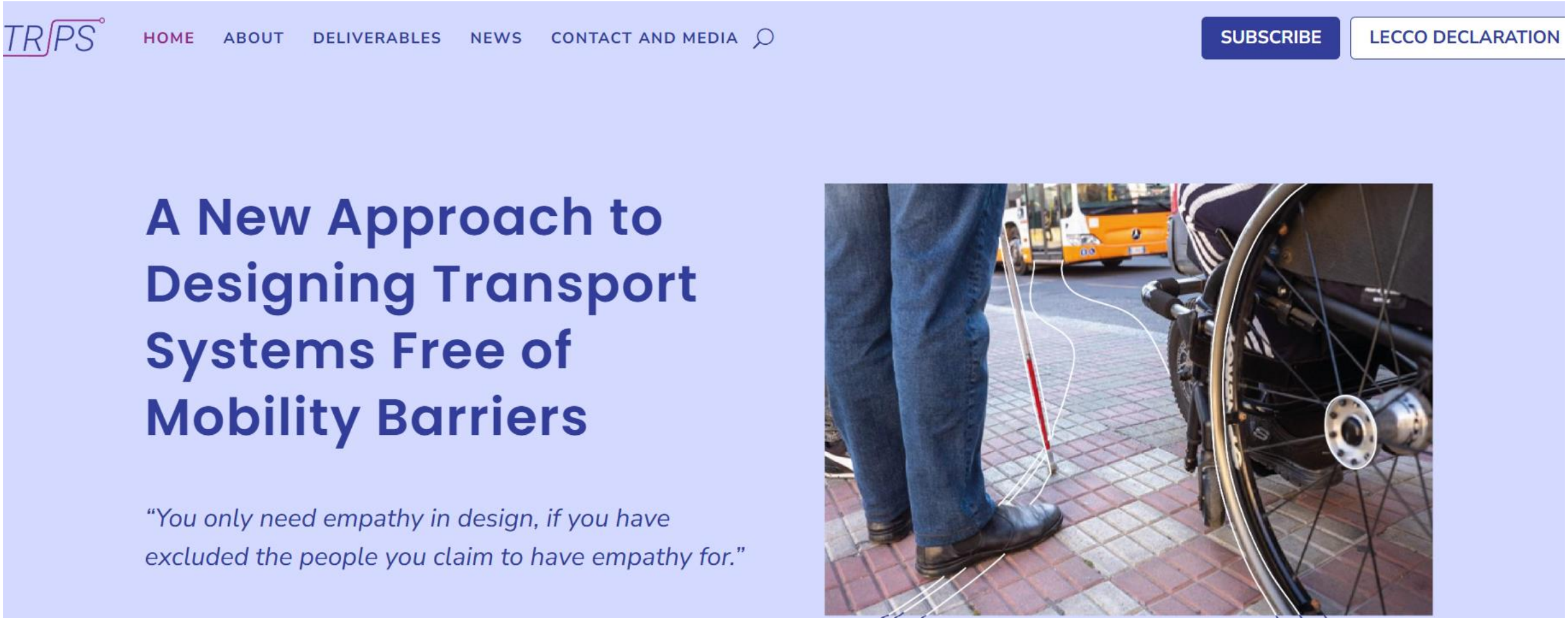
Established ideas and practices must change so that inclusive and diverse bike sharing becomes the norm.

Asking people with disabilities about their ideas is a good starting point to enhance accessibility of bike sharing.

Source: @DLR

More information

Visit project website for more information: https://trips-project.eu/



References

- Eurostat (2018). https://ec.europa.eu/eurostat/web/products-eurostat-news/-/EDN-20181203-1
- Goralzik, A., König, A., Alčiauskaitė, L., Hatzakis, T. (2021). Shared mobility services – an accessibility assessment from the perspective of people with disabilities. European Transport Conference 2021, 13-15 September
- Repetto, C. et. al (2020). D3.1 Report on Mobility Services Trends Impacts and Related Policies. TRIPS project. Available online: TRIPS-D3.1-Report-on-Mobility-Services-Trends-Impacts-and-Related-Policies.pdf
- Repetto et al., (2021). D4.1 MDI – Mobility Divide Index. TRIPS project. Available online: https://trips-project.eu/wp-content/uploads/2021/04/D4.1-MDI-Mobility-Divide-Index-TRIPS.pdf
- Shaheen, S., Cohen, A., Chan, N., & Bansal, A. (2020). Sharing strategies: carsharing, shared micromobility (bikesharing and scooter sharing), transportation network companies, microtransit, and other innovative mobility modes. In Transportation, land use, and environmental planning (pp. 237-262). Elsevier.

Pictures

[1] https://www.vanraam.com/de-de/aktuell/pedder-spezialrad-projekt-van-raam-raeder-leihen-in-bremen

[2] https://adaptivebiketown.com/

Imprint

Topic: **The view of people with disabilities on bike sharing – insights and recommendations from a European study**

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