

# The views of persons with disabilities on future mobility

Insights from the European research project TRIPS

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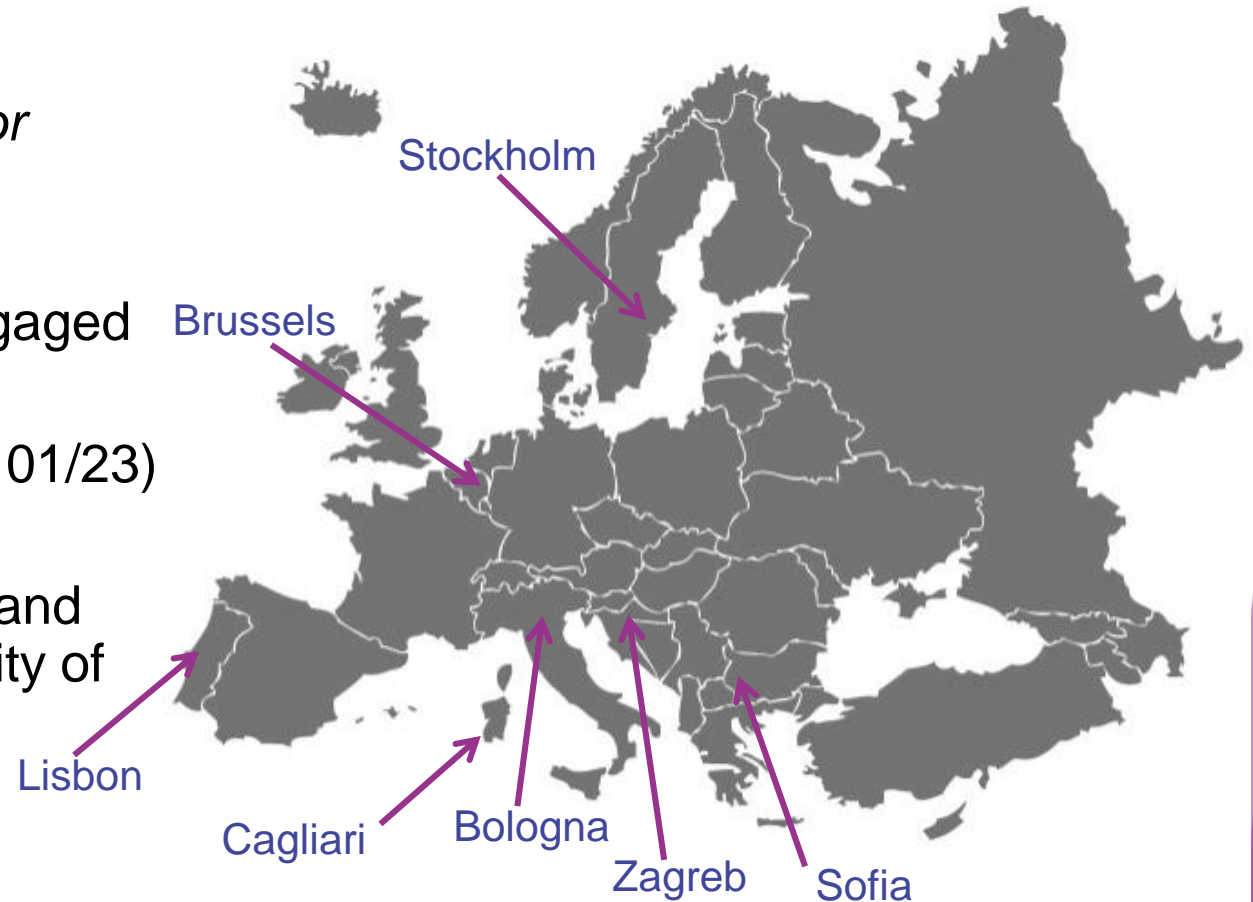
# Motivation

- Emerging mobility systems like ridepooling or robo taxis might decrease accessibility due to cost-related or skill-related exclusion (Milakis, Gebhardt, Ehebrecht & Lenz, 2020).
- This is an opportune moment to design them accessible and inclusive from the beginning
- Understanding users' accessibility requirements regarding new, shared mobility services is a prerequisite for inclusive design and operation
- Research question: **How do people with disabilities assess emerging, shared mobility services and how can these systems be adapted to their needs?**

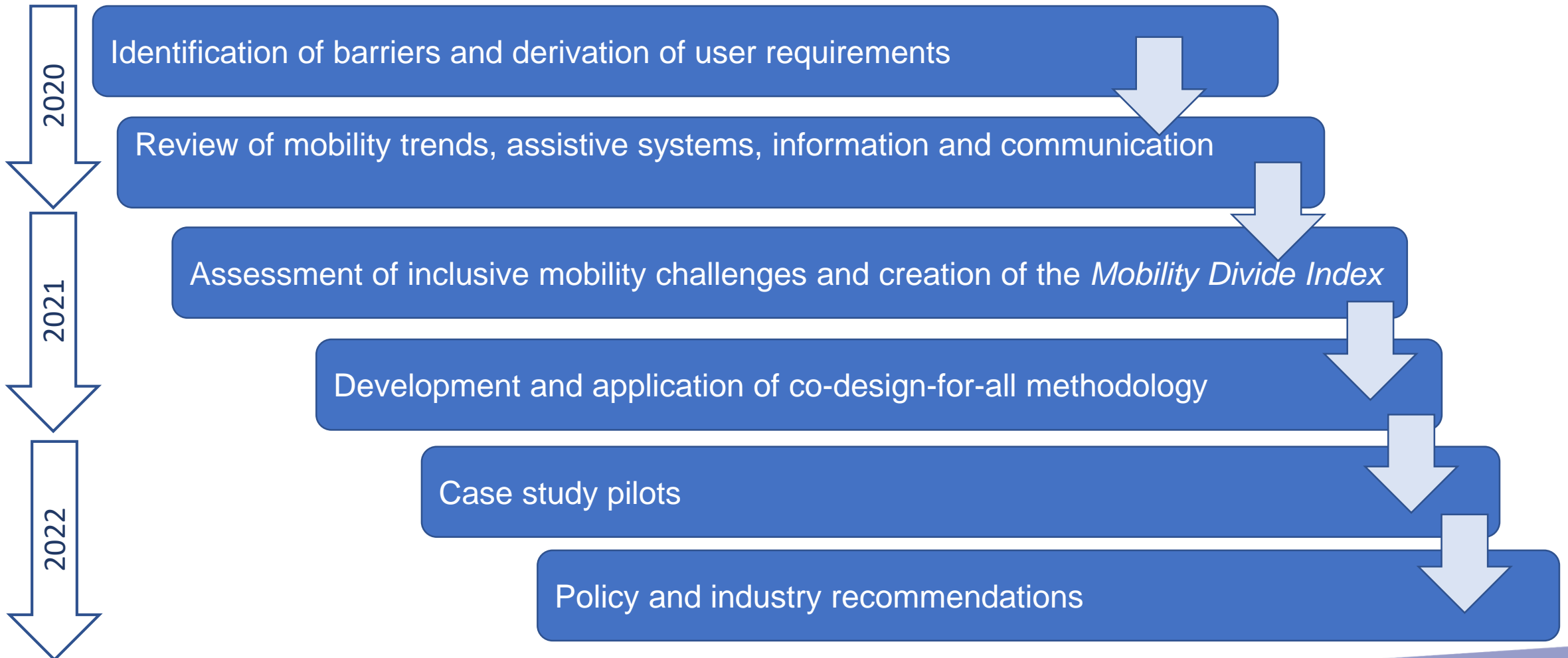


# The European *TRIPS* project

- *TRIPS* stands for *TRansport Innovation for vulnerable-to-exclusion People needs Satisfaction*
- 10 partners and 7 European cities are engaged in the project
- The project is funded for 3 years (02/20 – 01/23) by the EU Horizon 2020
- Main objective: Engage disabled citizens and institutional actors in improving accessibility of transport

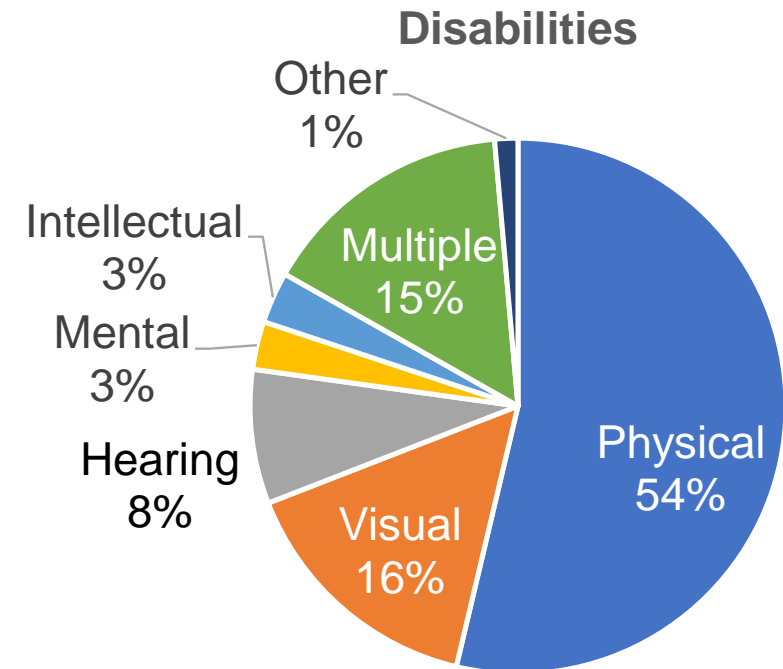


# Methodology



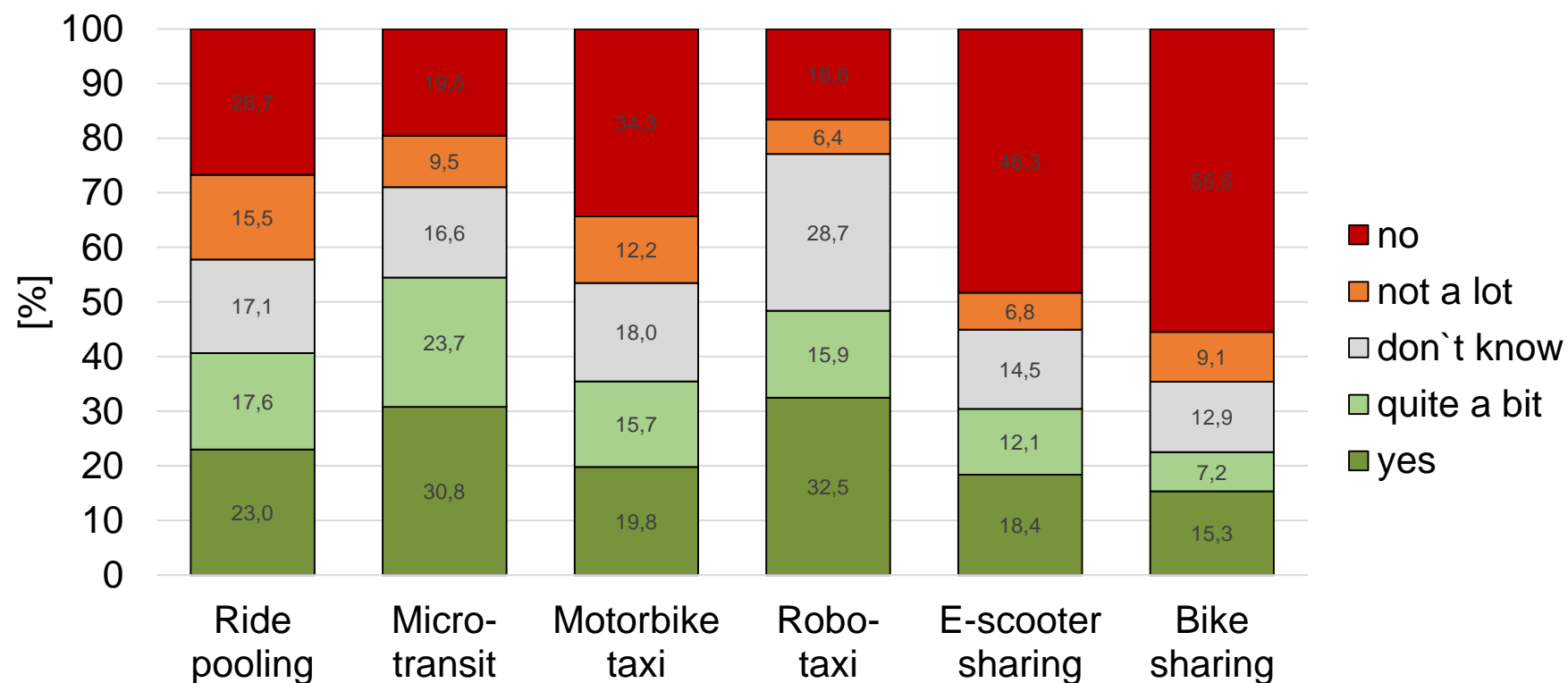
# Mobility Survey

- Survey was accessible online from Nov. 20 to Feb. 21
- Data of 553 persons with disabilities from 21 European countries were analyzed
- Sample was relatively gender-balanced, with 45.8% women
- The mean age was 46.4 years (SD = 15.7 years)
- Subjective assessment of 9 mobility concepts, e.g., robo taxi and 13 future technologies, e.g., Augmented Reality

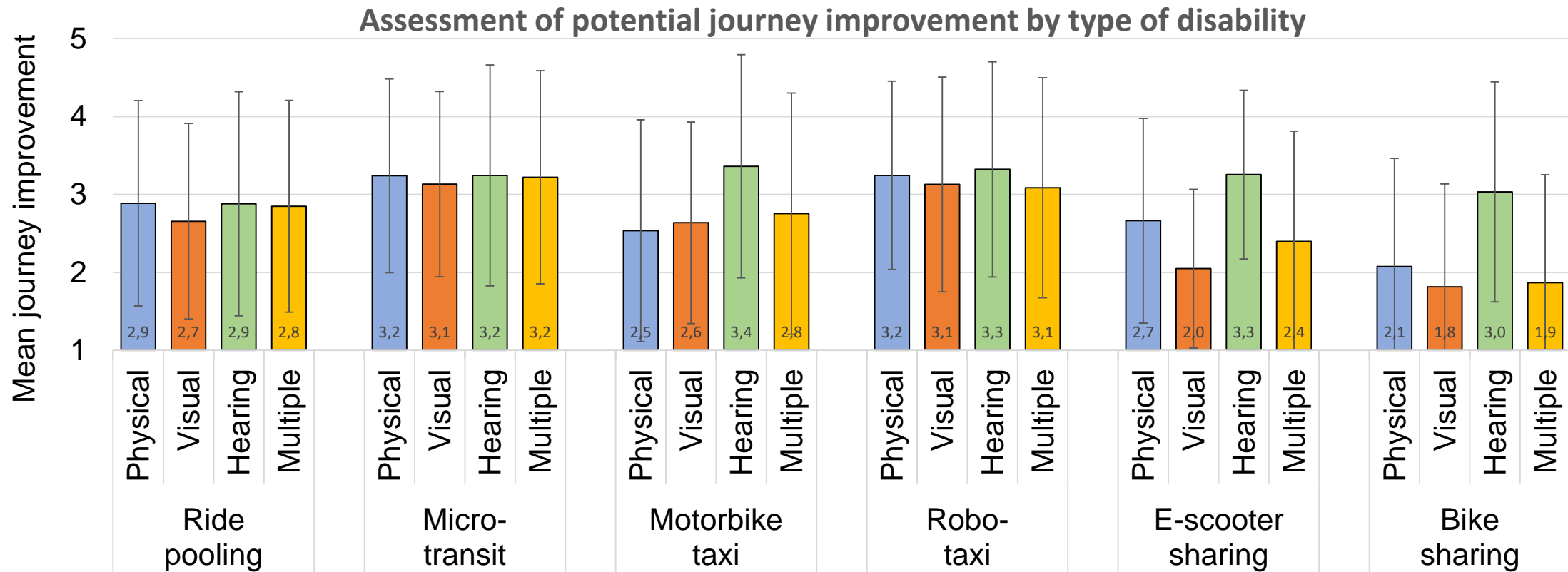


# Results – Assessment of mobility services

„If we could make this system available, would it make your journey more independent?“



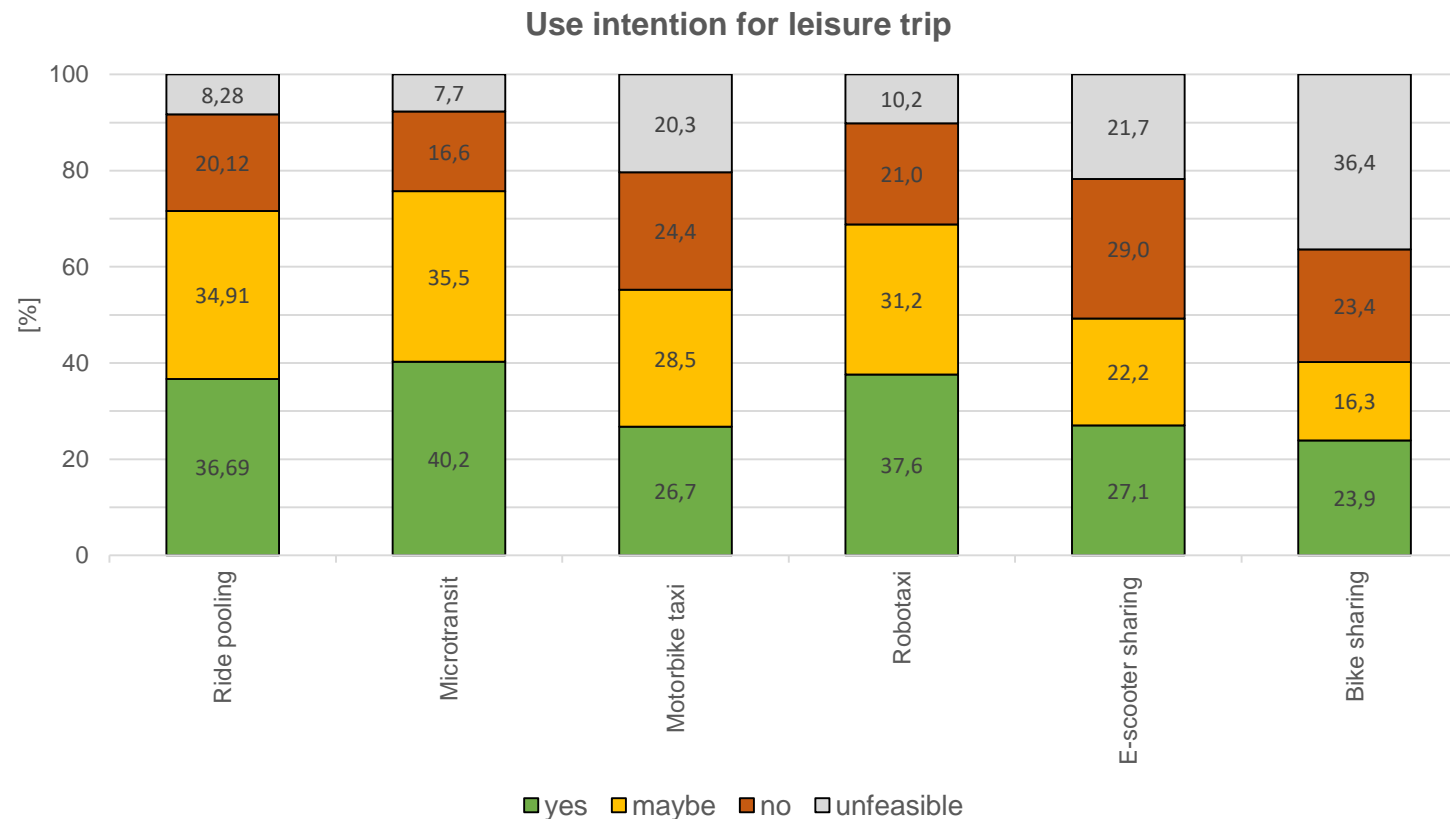
# Results – Assessment of mobility services



\* mean assessment over six facets, 1 = very little improvement, 5 = very large improvement

# Results – Use intention

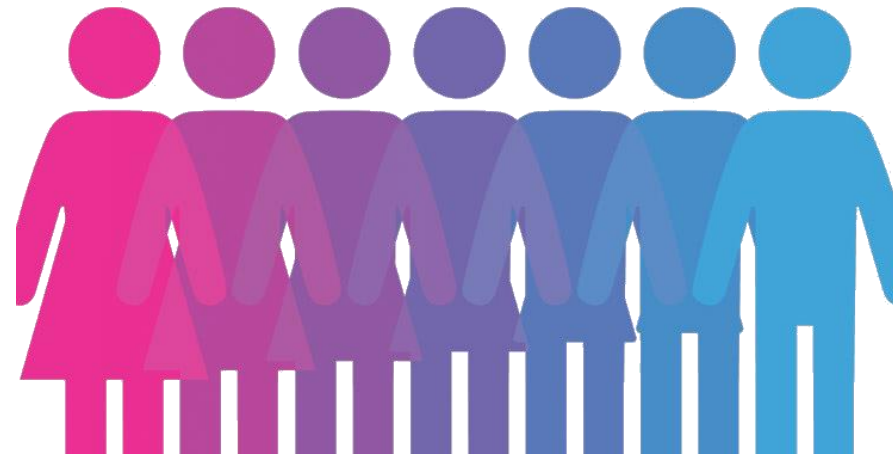
Use intention for shared mobility systems was rather low, especially for two-wheelers and self-controlled means, like bike sharing (Goralzik, König, Alčiauskaitė & Hatzakis, 2021)





# Gender issues

- In general, women are less willing to use new mobility systems. This applies in particular for ride pooling, motorbike sharing and robotaxis.
- More research is required to understand the reasons behind these findings and measures to increase willingness of women to use these systems.



# User suggestions for enhancing accessibility

- Open Question: “*What would you need to make this system work for you?*”
- Qualitative content analysis (Mayring, 2004)
- Identification of more than 660 suggestions
- Suggestions were clustered to eight different areas of measures:
  1. service design aspects
  2. vehicle design concepts
  3. social awareness and training of staff
  4. policy measures and regulations
  5. infrastructure measures
  6. safety
  7. human-machine-interaction
  8. affordability

Code System	Robotaxi	Bikesharing	E-scooter sharing	Microtransit	Motorbiketaxi	Ridepooling
service design aspects						
registration, booking & payment						
service quality						
on-demand service						
door-to-door service						
availability						
temporal availability						
spacial availability						
shorter travel times						
reliable and predictable ser						
vehicle design concepts						
single-use vehicle / avoidance of						
entry and exit						
enough time						
careful start						
electric ramp						
easy access and entry						
wheelchair accessible						
space requirements						
comfort						
alternatives to wearing a h						
comfortable seats						
adapted vehicle concepts						
availability of seat						
back rest						
individually adjustable						
four-wheelers						
measures for increasing sta						
equipped with assistance s						
electric support						
additional rebuild						
handbikes						
self-driving						
compatible with wheelchair						
tricycles						

# Recommendations for making new, digital mobility services more accessible

## Short-term measures

- Develop a journey planner that provides information about the accessibility of door-to-door journeys in an accessible and reliable way.
- Offer booking systems that do not require mobile internet access
- Provide adapted vehicles like tandems or tricycles in sharing fleet
- Enable persons with disabilities to own smart technologies and raise their digital competence and confidence to enable them to interact with smart mobility systems

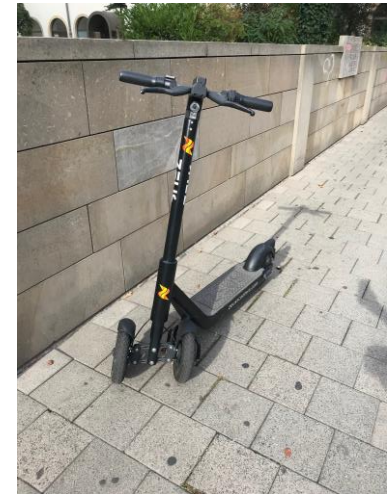
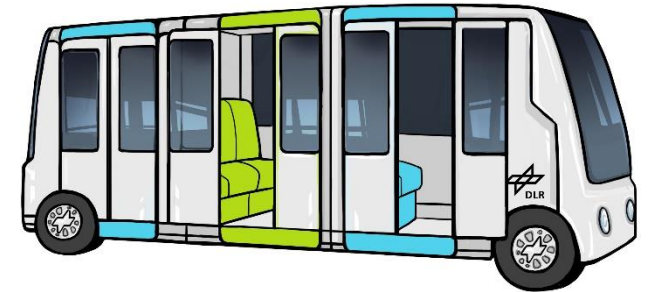


Fig. Examples for adapted vehicles

# Recommendations for making new, digital mobility services more accessible

## Medium- & long-term measures

- Infrastructure measures like dedicated lanes
- Develop and test compartment concepts in public transport
- Develop ways for virtual stop identification
- Engage disabled users in the design of inclusive mobility solutions



Most of the suggestions for improvements, such as separate infrastructure or reliable and predictable information, would also benefit people without disabilities.

# Policy recommendations

- Enable persons with disabilities to own smart assistive technologies to enable them to interact with smart mobility systems
- Raise the digital competence and confidence in the use of digital technologies of persons with disabilities
- Invest in public campaigns to improve social attitudes and transport etiquette towards citizens with all types of disabilities and access needs
- Make the participation of disability/accessibility experts in standards developments for vehicles, mobility systems and transport services mandatory
- Invest in a European Accessible Design Centre of excellence that can provide relevant expertise to European companies



# References

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# Thanks for your attention and interest!

For further information on the project visit

<https://trips-project.eu/>

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