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Transport Accessibility of Persons with Reduced Mobility: the Challenge of Autonomous Vehicles and AccessibleEU

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Objective and definitions

- Appraisal of pros and cons of the use of Automated Vehicles/AVs by Persons with Reduced Mobility/PRMs

- *PRMs* = Persons with Disabilities/PWDs and older old persons

- *Methodology*: policy-oriented meta-analysis

- *Overall goal*: increase of independence of PRMs

- PRM mobility conditioned by impairment AND (non)supporting environment

Changing socio-demographics

- 24% of the European adults are PWDs   ->
  less mobility and participation in social life

- Close association between *older age* and *disability*   ->
  problem of ageing society

- PWDs are 50% more likely to be at risk of poverty and social exclusion
  compared to persons without disabilities   -> equity problem

AccessibleEU and European legal framework

- European Accessibility Act (Directive EU 2019/882) promotes accessible products & services to the benefit of PWDs

- Regulations on Rail & Bus Passenger Rights as well as EN technical standards for facilitating access to PRMs

- ***AccessibleEU*** *resource centre*: EU initiative 2023 for a barrier-free Europe, EU-wide implementation of accessibility legislation, standardization in the fields of transport, built infra, digital technology etc ('Design for All')

- Leader Fundacion ONCE and 4 partners, among them ENAT

PRM categories in the transportation sector

- *Physical disabilities*: walking limitations, use of mobility aids, wheelchairs

- *Visual impairments and blindness*: dependent on audible info and tactile means

- *Hearing impairments and deafness*: dependent on visual info

- *Cognitive deficits*: communication problems

- *Hidden disabilities*: physical and mental

Automated Vehicles AVs

- Driverless Level 5 2030+, AVs will be essentially Electric Vehicles (EVs)

- *Pros*: safer traffic, more inclusive mobility
- *Cons*: road capacity increase->induced traffic->recurring congestion

- *H2020 FRONTIER project*: AV traffic mgmt in multimodal networks -> pilot D. Plakentias-AIA corridor-> AVs as FM/LM mode to urban rail -> AV-related governance scheme for Attica (Deloukas et al. 2021)

Mobility behaviour of PRMs

- PRMs make fewer trips, especially with ⬈ severity of disability

- Walking hindered by broken tiles, illegally parked cars etc -> obstacle-free routes are needed
- PRMs that walk or wheel consider (apart of distance) width and slope of sidewalks for their route choice decisions

- Minority of PT vehicles, stops and stations still ready for autonomous or assisted boarding/alighting: no level boarding, lift breakdowns etc.   *digital (in)accessibility*: ill-designed mobile apps
- Rural areas underserved by PT impede PRM mobility

- Non-driving PRMs are dependent on family members/friends for rides
- *SP-experiment*: 2 X VoT for access compared to non-PRMs

Automated vehicles and PRMs

- Alternative transport options for PRMs
  - on-demand paratransit (no spontaneous use)
  - retrofitted conventional cars (costly option)
- *Future option*: Automated Vehicles
  - transfer-free D2D service, even in remote areas
  - increased autonomy
  - greater help for non-driving PRMs than for driving PRMs
- *Problems*: feeling of no control, lack of trust, affordability->shared AVs
- ***AccessibleEU*** may increase AV acceptance for PRMs through training of instructors, awareness raising, education

Universal design and accessibility of AVs

- *Universal Design (UD) in transport*: barrier-free design of transport vehicles and infrastructure, benefiting both PWDs and non-PWDs

- AV co-design for its use by PWDs is necessary: the development of accessibility standards for AVs is a concern of ***AccessibleEU***

- *Research gaps pertaining to AVs and PRMs*:

  - assistive in-vehicle technologies for enhanced ambient control within AVs

  - acceptance of AVs by PRMs

  - salience of digital divide for PRMs

  - training content for instructors and accessibility experts

  - connectedness of PRMs when planning, booking, and paying for travel with shared AVs

AccessibleEU
Resource Centre

An EU "Flagship Action" on Disability, managed by the European Commission

➢ **Launched July 2023** by Fundación ONCE and partners

➢ **To ensure** the participation of persons with disabilities in all areas of life on an equal basis with others

➢ **Promoting accessibility** in the Built Environment, Transport, ICTs and Policies across all sectors

➢ **In all EU Member States**, for all public, private and NGO stakeholders in accessibility

➢ **Online** Library, Good Practices, Studies, Training and Events

Visit: https://accessible-eu-centre.ec.europa.eu

Email: accessibleeu@fundaciononce.es

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Thank you for your attention!

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