Automated vehicle Services for People with disabilities – Involved Responsive Engineering (ASPIRE Center)

Center Director: Rory A. Cooper, PhD
Center Co-Director: Brad E. Dicianno, MD, MS

Topic: Implications of Accessible Automated Vehicles and Mobility Services for People with Disabilities
On Friday, 7 January 1994, in the aftermath of one of Pittsburgh's most brutal snow storms, two rental moving trucks arrived at Building 4 of the Highland Drive VA Medical in Pittsburgh, Pennsylvania. Those trucks were driven by Steve Albright and David VanSickle. Rory and Rosemarie Cooper joined the convoy carrying equipment in their van. The equipment was unloaded by this small team into a vacant locker room and storage area that was to be transformed into HERL. Since the space had not yet been renovated to be useful, it was unpacked in phases as rooms became available. HERL had a small office in Building 2, the location of the ACOS For Research offices, which was used until space could be made available. In addition, some of the labs were set-up in the Coopers' home.

PROJECT OVERVIEW

- Grey literature
- Scientific literature
- Systematic Review
- Voice of Consumer-Provider
  - Focus groups & Journey mapping
  - Pilot survey
  - Nationwide survey
- Data synthesis
- Extrapolation
- Analysis
- Solid modeling
- Modeling-Simulation

Preliminary Voice of Consumer Transportation data from previous work conducted by HERL.
Flow Chart for Systematic Literature Search

- **Primary aim:** To conduct a comprehensive review of the grey and scientific literature
- **Secondary aim:** To summarize research gaps and implications for policy and knowledge translation to inform future work
SUMMARY OF LITERATURE FINDINGS

• The grey (n=34) and scientific literature (n=27) highlight opportunities and barriers to accessible automated vehicles (AVs) and services. Literature on older adults is most prevalent.

• Accessible AV design will need to include the entire travel journey, and solutions must be tailored to the needs and preferences of those with different disabilities and impairments.

• Need for guidance on accessible design and for planning and policy surrounding AV technology and infrastructure.

• Research gaps and implications for policy and knowledge translation outlined.
RESEARCH GAPS (THEMES)

• Transportation trends and socio-demographic factors
• Accessibility and usability of AVs and services
• Outcomes of AV use
• Research to inform policy or knowledge translation
KEY POLICY IMPLICATIONS

• Universal design and participatory action design and engineering principles should be part of the development of AVs, AV services, and the built environment.
  ✓ Include PwD and other important stakeholders, including transportation service experts, adaptive driving instructors, travel companions, caregivers, and others

• Policy surrounding payment for services, including benefits, state and federal coverage, and voucher systems, is needed, especially given the potential impact AVs could have on medical, employment, and education outcomes.

• Policy will need to be developed on driver licensing requirements for AVs that does not unnecessarily exclude specific groups of PwD.

• Policy will likely be informed by research on how AV use affects physical or mental health, social determinants of health, and society at large.
PROJECT IMPACT

The ASPIRE Center will provide a roadmap for manufacturers and transportation system providers that is responsive to the needs of people with disabilities and demonstrates a path forward for the integration of accessible automated vehicles and mobility services.