Mobility Scooters in the Wild: Users' Resilience and Innovation

THOMAS BIRTCHNELL
THERESA HARADA, GORDON WAIT
University of Wollongong, NSW, Australia

Abstract Recent research in Australia on powered mobility device users highlights that the built environment does not cater for their inclusion. The powered mobility device as an assistive transport technology is vital in ensuring access to public services to ensure health and wellbeing for people with mobility impairments. In this paper, we examine how users are co-producing urban design through their practices performed "out in the wild". We identify the pressing considerations for how powered mobility device users both survive and thrive. Firstly, as *electric* powered mobility devices, they face similar legislative and regulatory issues to e-scooters and other niche innovations currently being trialled on city streets that both solve problems and create them for urban governance. How to create inclusive policies for powered mobility device users that allow safe travel and easy access is currently not well understood. Secondly, the impact of climate change on energy systems is creating momentum for renewable power and smart systems that will in turn impact decisions and policies around electrified private and public transport and associated energy infrastructure. It is important that powered mobility devices are not overlooked in planning for inter-modal electrified transport. Third, national and international efforts to achieve safer and more sustainable "car free" cities to reduce congestion and increase liveability need to include design for powered mobility device users. This could potentially provide spaces for greater inclusivity and social integration of powered mobility device users through the design of public and private spaces. Finally, an ageing population globally is set to encourage demand for technologies and accompanying infrastructure to facilitate mobility into senior years. Given the nexus of legality, energy, sustainability and ageing, it positions this paper's focus as an integral linchpin to critically informed and inclusive urban design.

Keywords: Infrastructure, mobility, inclusion, transport, inter-modality, access, participation.

Introduction

The notion that all persons have the right to live independently and enjoy personal mobility is now embedded in national and international policy. The World Health Organisation (WHO), of which Australia is a member-state, notes, the inequality that people with a disability confront is "largely due to the barriers they face in their everyday lives, rather than their disability" (2018). The Global Disability Action Plan has objectives including improving access to services alongside strengthening and extending assistive technology (WHO, 2018). Likewise, the United Nations Convention on the Rights of Persons with Disabilities (UN 2006), to which Australia is a signatory, sets out the rights of persons with disabilities (including to participation inclusion, and accessibility) and the obligations of signatory states. Equally, Australia's legislative and policy response to the rights of persons with disabilities has recently undergone "the most fundamental social policy reform" since

the introduction of Medicare: the rollout of the National Disability Insurance Scheme (NDIS) and its administering Agency (NDIA) from 2016 (Walsh and Johnson, 2013). The scheme is both ambitious and divisive and has elevated disability in the national discourse (Holland, 2013). Policy makers recognise that in a context of an ageing Australia that for one group of people with disabilities, those living with reduced mobility, removing barriers that operate against movement in their everyday life is an urgent and critical task.

In Australia, the sum knowledge about mobility aids is piecemeal and restricted predominantly to quantitative surveys. For example, in the 2015 Survey of Disability, Ageing and Carers (SDAC 2015) 639,300 people with disability reported using mobility aids; of these, around 190,000 reported using a manual or electric wheelchair (ABS 2015). The Mobility Scooter Usage and Safety Survey Report (ACCC et al., 2012) estimated there were at least 231,000 scooter users in Australia; approximately half over, and half under, age sixty, suggesting that motorised mobility assists inclusion for both younger and older Australians with a disability. It is unknown how many more Australians could benefit from powered mobility devices to maintain good health or wellbeing, access social support, and maintain relationships if they had the opportunity to do so; or, what might be required to enable that to occur (Brandt et al., 2004, Sullivan et al., 2014).

Similarly, there is little rigorous research into the design and safety features of various models of powered mobility devices which makes integration into existing systems difficult (Kitching, et al. 2016). Furthermore, they attract media attention because of the perceived danger to the community where they are variously framed as a "plague" (The Age 2016) or "slow moving death-traps" (The Daily Telegraph 2012). In Australia, the Australian Competition and Consumer Commission (ACCC 2010) reported sixty-two deaths and 442 hospitalisations for the period between 2000 and 2010 related to electric motor scooters, yet there remains a lack of understanding around the circumstances of accidents that occur (Thoreau 2015). Despite the lack of policy around how they should be used, powered mobility devices are to be found both on roads and on footpaths, and not just in urban environments; they are commonly used in peri-urban and regional public spaces associated with retirement or sea/tree changers. Since they are not optimally suitable for either roads or pavements, powered mobility devices are attracting concern in policy arenas around safety, liability and infrastructural adaptability.

In this article, we begin by examining how existing users of powered mobility devices are pioneering adaptations and innovations at the grassroots level in order to expiate their neglect in transport and infrastructure planning. We draw on the qualitative results of a seed project that investigated the experiences of 12 people who use Motorised Mobility Devices in everyday life in the Illawarra region of New South Wales. This was a short-term ethnographic project that combined multiple methods: semi-structured interviews, solicited travel diaries, and "go-alongs", that is, the researcher accompanied the participant on a regular journey either on foot or by powered mobility device. The participants were recruited via a pamphlet drop in two regional shopping centres and snowballing. There were three single women, two married women, six single men and one married man ranging in age from early 50s to late 80s. All participants relied on a government benefit and only one worked in a voluntary capacity. The group included an amputee, stroke suvivors and those who suffered from chronic illness and all experienced limited physical mobility. Two had access to a car while the remainder travelled only in the local area and most actively avoided using public transport. We illustrate with empirical examples the design needs across three contexts: storage; access to public space; and inter-modality.

Storage

Firstly, powered mobility devices require protection from the weather to ensure optimum working capabilities. As well, owners require adequate space to be able to charge and maintain the device. Therefore, storage is an important consideration for owners. In most cases, garages provided a secure place to store, charge and maintain the device, but for those without a lock-up garage, a level of ingenuity was required. Internal storage options included near the front door, in the dining room or living room, which often impeded free movement through the home for the occupants. Despite reducing the usable space in the home, owners were adamant that the security of the device was more important. Often this was the only form of transport available to the participants, the purchase price had been substantial, and they were anxious about potential vandalism or theft of the device. For those without internal storage options, using the available outdoor space to protect and secure the device prompted further creative strategies. Temporary ramps allowed owners to park the devices on balconies and patio spaces. Often these ramps were shackled together being made out of discarded building materials and used to smooth over access pathways in and out of the property. One couple had installed a pulley system so that the device could be raised onto an external balcony.

Secondly, all participants recounted that there were few existing facilities for the storage of powered mobility devices when out of home. The powered mobility device is dissimilar to a bicycle in that it is not easily parked – it is out of place when stationary and not secure on the street, or in train or bus stations (Aldred and Jungnickel 2013). In shopping centres, there were varying levels of tolerance for devices to be parked in common areas though no secure parking was allocated, and charging was not catered for. Clubs and pubs allowed for exterior parking but not for charging of powered mobility devices. This is significant because often users of powered mobility devices are deterred from travelling because of concerns about the availability of both parking and charging facilities. Thus users often carried a spare battery to assuage their range fears and restricted parking their device to a site where it was always visible. These examples illustrate how users are largely left to their own devices to develop strategies that facilitate easy storage, charging and maintenance. Much like an automobile, responsibility for storage and maintenance are abrogated, despite the fact that these are assistive technologies that enable social inclusion and participation.

Access to public space

The niche that powered mobility devices occupy is perplexing for policymakers because at present there is no functioning “system” for them, which would make their use predictable and more reliable. No special provision is made for powered mobility devices and they are expected to “hitch a ride” on existing pedestrian, road and public transport networks. Participants commonly identified a host of challenges in the built environment that made it difficult to navigate everyday spaces. This included a lack of footpaths, the condition of footpaths, a lack of on/off ramps to access the footpaths and the difficulties in negotiating ramps at intersections with traffic lights. While ramps at intersections are now common and are accessible for cyclists or pram users they present a particular set of difficulties for mobility scooter users because of their size, weight and relative lack of fine movement skills:

> “I got stuck on a pram ramp... So the front wheels were on the pavement, the anti- tip wheels were stuck on the ground, and my drive wheels were up in the air. The pram ramps are so steep that I ride in the breakdown lane there.” (Geraldine, 72 years old)

Often powered mobility device users felt that they were forced to use roads, to develop alternative routes, and to make do in the face of adversity. In order to avoid the problems of steep gradients or camber, some people carved out individual routes over time, while others took a preemptive approach to a lack of paved footpaths:

> "I find that most of the kerbs are really deep and I just hit them with the scooter, so I don't use them. I tend to use driveways, and I actually know which driveways don't have ah, a lump on them, to get up, and which driveways do. So I go the way, so basically it's through trial and error. I've worked out where you can go without actually hitting bumps, especially the bumps where they've, haven't fixed up the footpaths in um, Kendall Street, and they haven't fixed those up, and we wrote about that to the council and they said there wasn't enough money for that." (Patricia, 78 years old).

Thus, users of powered mobility devices make do with a system that neither accommodates nor facilitates their mobility. They develop strategies to avoid known obstacles and ensure their own safety, though the alternative strategies they develop carry other risks:

> "I go on the road. I never travel on the grass because I can't see if there's a hole in the grass so I have to stay on the road. Even walking, I walk on the road because I can't see the holes in the grass and I can trip. I've done it before and I won't do it again." (Fiona, 79 years old)

Sharing road spaces with faster moving cars poses a particular challenge. While permitted to travel on the road when footpaths are unavailable, users of powered mobility devices tend to routinely disregard established road rules. For example, many cited travelling against the direction of traffic, went directly across roundabouts, or crossed busy roads and highways outside of designated pedestrian areas or refuges. These practices though preferred by the users carry a high level of risk because generally powered mobility devices have lower speeds and less manoeuvrability than cars and bicycles. They also pose challenges in shared spaces for pedestrians especially those with children and pets because of the perception of potential injury because of the size, weight and speed of the devices. Our study revealed that powered mobility devices are liminal, they do not easily fit into pedestrian or road spaces and are forced to navigate a system that is currently inadequate for their requirements and needs.

Inter-modality

Government policies have focused on educational campaigns that promote the health and environmental benefits of reducing private car use and proposing inter-modal transport as a solution (Brög et al. 2002, Seethaler & Rose 2004). Inter-modality implies the use of two or more modes of transport to move people or goods from origin to destination, for example driving to the train station, or taking an electric scooter on the bus (Allard and Moura, 2016). Yet, Chen & Chao (2011) argue that it is not only the quality and availability of the main transportation modes which are important but also accessibility to, and interaction between, different modes and services. So while there may be a functioning system of trains, buses, light rail and so on, what remains paramount is how particular groups have access to these services in light of their mobility restrictions. Currently, powered mobility devices do not dovetail with other modes of transport and in many cases actively clash with them. For example, powered mobility devices with three wheels are not eligible to use public buses

while four wheeled devices are eligible. In response users must coordinate solutions themselves or simply forego the benefits of inter-modal travel. For many users, the train offered the most seamless travel experience for local travel:

> "Oh, I love it, like, if I want to go into Wollongong, get on the scooter, onto the train, off the train, round Wollongong. The battery's good for 4 or 5 hours, I've even taken it to Sydney." (Jake, 72 years old)

Accessible inter-modal travel however is not uniform. While many stations have ramps and lifts, some stations do not, meaning the train is inaccessible for powered mobility devices as it is for wheelchairs, push-chairs, passengers with luggage and so on. Powered mobility device users need to develop the appropriate strategies and techniques to overcome the shortfalls of the material infrastructures:

> "Then they would put me on the train and ring Albion Park and tell them that I was coming. That has changed a bit too because we no longer have full time staff at the station. So what happens now is that if I go to the station and the attendants aren't there I ride down to where the back of the train is going to be which is where the guard is, I wave to the driver as he goes past to let him know that I am there and I get the guard who has to come out to the other end of the platform, get the ramp out, put me on the train." (Samantha, 60 years old)

These examples illustrate that despite policy which advocates for improved accessibility for groups of people who experience impairment or disability, there is little supporting infrastructure that allows for truly independent mobility. Users of powered mobility devices are positioned as out of place in many contexts and needing assistance to utilize existing facilities. Transport systems are not standardized in ways that enable seamless transition, nor are they adequate to enable people to safely undertake the everyday journeys that help them make sense of themselves and their lives.

Conclusion

While government policies focus on the need for low carbon solutions to road congestion and environmental pollution, with the added benefits of improved air quality, improved levels of health and physical activity, and greater access to social participation there are still fundamental issues that need to be addressed. Providing an equitable system of transport that gives attention to marginalized groups such as users of powered mobility devices is a timely challenge. It comes at a time when there is greater recognition of the vulnerability of some groups and reinforces the need for appropriate responses in the legal, technical and regulatory frameworks that govern mobility. The results from our study reveal the obstacles and barriers faced by users of powered mobility devices could readily be addressed by more thoughtful attention to the planning, design, layout and maintenance of physical spaces. There is to date little qualitative research into the everyday experiences, practices and use of powered mobility devices and we point to this as a valuable research direction in order to inform policy and planning.

References

ACCC (2010). 24 Mar, 2011. Mobility scooter injuries examined in ACCC report https://www.accc.gov.au/media-release/mobility-scooter-injuries-examined-in-accc-report

ACCC, NRMA Motoring & Services, CHOICE, EnableNSW & Flinders University (2012). National Survey on Mobility Scooter Use, Mobility scooter use and Safety Survey Report. https://www.productsafety.gov.au/system/files/Mobility%20scooter%20usage%20and%20safety%20survey%20report.pdf

Allard, R. F., & Moura, F., (2016). The Incorporation of Passenger Connectivity and Intermodal Considerations in Intercity Transport Planning, Transport Reviews, 36 (2): 251-277. DOI: 10.1080/01441647.2015.1059379

Aldred, R., & Jungnickel, K., (2013). Matter in or out of place? Bicycle parking strategies and their effects on people, practices, and places. *Social and Cultural Geography*, 14 (6): 604-624. DOI: 10.1080/14649365.2013.790993

ABS (2015). 4430.0.10.001 - Disability, Ageing and Carers, https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/4430.0.10.001~2015~Main%20Features~About%20the%20Survey%20of%20Disability,%20Ageing%20and%20Carers~2

Brandt, Å., Iwarsson, S., & Ståhle, A., (2004). Older people"s use of powered wheelchairs for activity and participation. *Journal of Rehabilitation Medicine, 36 (2): 70–77.* DOI:10.1080/16501970310017432

Brög, W., Erl, E., & Mense, N., (2002). Individualised Marketing: Changing Travel Behaviour for a better environment OECD Workshop: Environmentally Sustainable Transport Berlin (05./06.12 2002). http://socialdata.de/info/IndiMark.pdf

Chen, C. F., & Chao, W. H., (2011). Habitual or reasoned? Using the theory of planned behavior, technology acceptance model, and habit to examine switching intentions toward public transit *Transportation Research Part F: Traffic Psychology and Behaviour*. 14 (2) :128-137 DOI: 10.1016/j.trf.2010.11.006

Holland, K., (2013). Celebrating the National Disability Insurance Scheme? Insights from News Media and Disability Advocates. News and Media Research Centre, Canberra, Australia. https://apo.org.au/sites/default/files/resource-files/2013/12/apo-nid69673-1112681.pdf

Kitching, F. A., Ozanne-Smith, J., Gibson, K., Angela Clapperton, A., & Erin Cassell, E. (2016) Deaths of older Australians related to their use of motorised mobility scooters. *International Journal of Injury Control and Safety Promotion*, 23(4):346-350. DOI: 10.1080/17457300.2015.1047857

Nixon, D. V., (2014). "Speeding capsules of alienation? Social (dis)connections amongst drivers, cyclists and pedestrians in Vancouver, BC." *Geoforum* 54 (0):91-102. http://dx.doi.org/10.1016/j.geoforum.2014.04.002.

Seethaler, R., & Rose, G. (2005). Using the six principles of persuasion to promote travel behaviour change - preliminary findings of two TravelSmart field experiments, Papers of the 28th Australasian Transport Research Forum www.patrec.org/atrf.aspx, Sydney, Australia. DOI:10.1.1.536.3364

Sullivan, J., La Grow, S.,Sridhar Alla, S., & Schneiders, A. G. (2014) Riding into the future: a

snapshot of elderly mobility scooter riders and how they use their scooters, *The New Zealand Medical Journal*, 127 (1402): 43-49. ISSN 1175 8716.

Sund, T., Iwarsson, S., Anttila, H., & Brandt, Å. (2015). Effectiveness of Powered Mobility Devices in Enabling Community Mobility-Related Participation: A Prospective Study Among People With Mobility Restrictions. *The journal of Injury, Function & Rehabilitiation*, 7(8):859-870. DOI: 10.1016/j.pmrj.2015.02.001.

The Age (2016). May 3, 2016. "Peril on the pavements as plague of speeding scooters brings injury and death" http://www.theage.com.au/victoria/peril-on-the-pavements-as-plague-of-speeding-scooters-brings-injury-and-death-20160503-gokqhr.html

The Daily Telegraph (2012). Feb 9, 2012. "60 dead - mobility scooters are slow-moving death traps" https://www.couriermail.com.au/news/sixty-dead-mobility-scooters-are-slow-moving-death-traps/news-story/55f3ba7a82f33161b14cbbea430b39f8?sv=32cd5d3ccbe51512faa8b611cc573bc

Thoreau, R. (2015). The impact of mobility scooters on their users. Does their usage help or hinder?: A state of the art review. *Journal of Transport & Health* 2: 269–275. DOI: 10.1016/j.jth.2015.03.005

UN (2006) Convention on the Rights of Persons with Disabilities. https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities.html

Walsh, J., & Johnson, S. (2013). "Development and principles of the national disability insurance scheme". *Australian Economic Review* 46(3):327- 337, DOI:10.1111/j.1467-8462.2013.12032.x

WHO (2018). 22 May 2018, News release, Sana Hafeez, WHO Champion for assistive technology, told her story at the World Health Assembly. https://www.who.int/news-room/detail/22-05-2018-sana-hafeez-who-champion-for-assistive-technology-told-her-story-at-the-world-health-assembly