



CROWD/4ACCESS

Urban mobility using long canes and guide dogs



Insight SFI Research Centre for Data Analytics

January 2021



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Urban mobility using long canes and guide dogs

This document summarises the experiences shared by users of long canes and owners of guide dogs who participated during the Crowd4Access Experience Sharing workshops that happened on-line during July 2020.

The experiences shared were categorised according to the urban elements they refer to, including quotes from participants and examples of locations where such urban elements can be observed. Also, each participant was asked to vote on the top 3 elements that they would like to see featuring on a map.

Four users of long cane participated in our workshops (1 male and 3 female), with one participant also having experience in walking with a guide dog. Three participants have low vision and one participant is partially blind, with one participant only using the long cane at situations of low light (e.g. during the night). Table 1 shows the urban elements that support mobility and Table 2 displays the urban elements that hinders mobility according to the participants' votes.

Table 1. Urban elements that support mobility and participants would like to see on a map

Urban elements that support mobility	Votes	
	Long Cane	Guide Dog
Wide footpath	2	
Raised kerb	2	
Fast/slow lane division	2	
Traffic lights (audible cues, vibration, arrow)	1	1



Marking or indicator around street furniture	1	1
Segregated cycle lane	1	
Access ramps (rather than steps)		1

Table 2. Urban elements that hinder mobility and participants would like to see on a map

Urban elements that hinder mobility	Votes	
	Long Cane	Guide Dog
Uneven pavement	2	
Wrong (or no) placement of tactile pavement	2	
Trees or branches at head level	2	
Narrow footpath	1	
Uncontrolled crossing		1
Street crossing with no audible cues, vibration or arrow	1	
Marking or indicator around street furniture (e.g. enclosed area for outdoor tables)		1
No access ramps (only steps)		1

Most participants described the experience of moving around the urban environment in Ireland and expressed the importance of becoming familiar with a given route before going there. Three participants described walking a given route with someone who will



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describe the environment before taking that route alone, whereas two participants described using online maps or apps to check possible information about a given route before going there.

"If I'm going to a new location (...) I would have someone with me to do that on the first occasion, and they would talk me through. Where are the different tactile pavements? Where the different crosses are.. then I would do myself then, after that."
(long cane user)

"if I was going to an area that I had not been before with the dog, that he wouldn't know, I would have to get sighted guide assistance or ask for directions when I get to a particular place."
(guide dog owner)

The participants' experiences lead us to believe that having a detailed map of accessible routes would support users of long cane and owners of guide dogs in planning their routes to a new place. In most cases, participants rely on their memory of the built environment in order to identify where they are at any specific moment. Most participants cited that sudden changes in the environment (e.g. changes in the location of traffic lights, repositioning or removal of tactile paving, or public works) may make their navigation confusing. Such maps, if frequently up to date, may also provide some support during navigation. One participant particularly cited the importance of the mapping initiative in supporting people who are blind or have low vision.

"This project sounds like something that would really be of benefit in mapping your streets if you wanted to, you know? When you are leaving home, if you wanted to go to a particular place in the city that if you could map your streets and you knew exactly where your crossings were it would be really, I think, it would be really good."
(guide dog owner)

In addition, mapping of the current urban environment in Ireland may provide an opportunity for urban planners in getting a data-driven perspective of mobility for people with different mobility modalities.

"I think that there's a lot of work that needs to be done in our cities and towns in Ireland and a lot of work needs to be done with the local authorities in the planning and the transport areas"
(guide dog owner)



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In the following, we enlist the urban elements cited by workshop participants during their experience sharing.

Mobility in footpaths

Uneven (broken) pavement

Unpaved surface

Footpath width

Raised kerb

Flushed kerb

Stairs and ramps

Tactile paving

Color contrast

Street crossings

Segregated cycle lanes

Fast/Slow Lane

Mobility in the presence of street furniture

Trees, overgrown shrubberies or head-level signage

Bollards

Mesh and grids covers

Mobile furniture (sandwich boards, tables, chairs, wheelie bins)

Mobility using private vehicles

Designated car parking (disabled parking)

Mobility using public transport

Bus stops

Luas

Railway station

Conclusion



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Mobility in footpaths

The first category of urban elements that we review refers to the characteristics of footpaths.

Uneven (broken) pavement

Uneven, broken, or worn out pavement was one of the top 3 problems cited by participants as decreasing their mobility in urban areas.

A long cane is used to scan the footpath surface in order to identify the elements in the surface and where it is safe to move. People who are proficient in the use of the long cane tend to walk fast while scanning for any danger and changes in the surface. Participants in the focus group informed that uneven pavement may cause them physical injury. The cane may suddenly bump against the raised pavement, either damaging their wrists used to guide the long cane, or their faces if the cane is projected against them.

"(...) when I use my long cane I walk really fast [so, when] pavements that are raised slightly or like, if a slab on the pavement isn't put down properly. (...) [My cane] will jab into that and I always hit myself with it. "
(long cane user)

"You can hit yourself [with the cane] or you can damage your wrist if the path isn't even."
(long cane user)

Also, uneven or broken pavement is a tripping hazard, for both owners of guide dogs and users of long canes. In some cases, the inclination of the pavement may lead cane users to lose their balance and believe they are falling into something. Most of the time, broken pavements are a tripping or falling hazard, which becomes particularly dangerous when falling alongside a long cane that may cause additional injuries.

"Because the way my condition is with my sight (...), if [the pavement] is flat and then suddenly dipped and it flushes into a house I might not see that and I would feel like I'm falling into something."



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(long cane user)

When waiting at a street light:

"They can see you with your cane and they try to pull you to cross the road without asking you if you need to cross. So if they do that and the path isn't levelled you can have a fall down, which is dangerous for you because of your cane."
(long cane user)

In addition to the cited hazards, broken and uneven pavement may accumulate water after rain and, unfortunately, such a situation cannot be detected by using a long cane. It can lead to users of long cane to step in such water and perhaps even slip.

"When it is raining, a lot of water collects in there [entrances to houses or driveways]. Someone with full vision will be able to see that, and it would be avoided, but I can't do that. (...) Flat or straight pavements would help."
(long cane user)

Unpaved surface

Another aspect of concern for mobility using long canes is the type of surface people would be walking on. One of the participants cited the difficulty in using a long cane on areas covered with grass, a type of problem that owners of guide dogs would not face.

"Whereas it would be nice for me to walk on grass, for a cane user your cane would not roll on the grass"
(guide dog owner)

Footpath width

Long canes are used in left to right motion in order to detect hazards and obstacles. Every time an obstacle is detected, the user of the long cane needs to slow down and decide how to avoid that obstacle. The less obstacles the faster the user of a long cane can move.

Obstacles can be fixed such as light poles, trees, signage; obstacles may be temporary such as wheelie bins or parked bicycles, or they can be mobile such as people or bicycles



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passing by. The wider the footpath the less likely it is for someone to face too many obstacles, the narrower the footpath the harder it is to navigate using a long cane. Therefore, wide footpaths improve the access to long cane users and owners of guide dogs by increasing the possibility to avoid obstacles.

"The two main things I would say would make a journey pleasurable, or very accessible, would be space and an even surface."
(long cane user)

In addition, users of long canes tend to be very concerned about not hurting people around them while using their canes. Therefore, wider footpaths also bring some peace of mind for long cane users since there is enough space for people to pass by.

[I would like to have] "my own space, my own room, rather than having to worry about other people around me having to move for me."
(long cane user)

[when the footpath is narrow] "if other people are coming towards me (...) I can't move for people. People have to go on the road for me."
(long cane user)

When faced with a footpath that is blocked or too narrow to pass, users of long canes and owners of guide dogs would navigate the environment differently. Whereas guide dogs are trained to guide their owners around obstacles while avoiding the traffic of vehicles, users of long canes would need to rely on their auditory senses to judge if they should leave the footpath into the street or not. In both cases, people who have low vision or are blind would be in a dangerous situation by moving into the street without full awareness of incoming traffic of vehicles.

Raised kerb

In addition to wider footpaths, the presence of raised kerbs was cited as an urban element that increases mobility for users of long cane and owners of guide dogs. The presence of raised kerbs is used mostly to warn for the transition between the footpath and the street, but it can also be used as a point of reference and guidance. Guide dogs are specially trained to stop at the edge of a raised kerb to inform their owners they are coming into the street.



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"Your dog is trained to stop at all kerbs. He is not meant to go out over a kerb, he is meant to stop as soon as he comes to the edge. He stops and as soon as he stops you know there is something there."
(guide dog owner)

Flushed kerb

Flushed (or dropped) kerbs both support and hinder the mobility using the long cane and guide dogs. According to the participants in the focus group, a flushed kerb can be used as a point of reference or to identify the location of street crossings. As there are many street crossings that contain a flushed kerb but do not contain tactile paving, users of long cane are used to associate flushed kerbs with street crossings.

"I personally like, (...) [a flushed kerb] does indicate where to cross and everyone knows that it is a universal thing that the dished kerb in the pavement is where you cross."
(long cane user)

"The [flushed] footpath is a very good guide to know that you are coming [to a street crossing]"
(guide dog owner)

On the other hand, flushed kerbs can also be a source of confusion when they appear in front of houses and driveways. In such cases, users of long cane may not be aware if that is a driveway, a street crossing or something else.

"Dipped kerbs are good at traffic lights, but a lot of times you get those dipped pavements at entrances of houses or driveways."
(long cane user)

Stairs and ramps

One participant pointed out preferring moving along ramps rather than taking the stairs. The main reason is to ensure that the person with low vision or blind would not miss a step and have the risk of falling.

"if I was going into [some premises] now, I would not use the steps, I would always use the ramp. I have both my dogs trained to find the ramp because it's easier. (...) [If I need to use the



steps] I would be more nervous that I wouldn't be able to distinguish them"
(guide dog owner)

However, if taking the steps is the unique option, the participant pointed to the need for a handrail that continues after the last step of the staircase. Also, pointed to the importance of having a high contrast strip at the end of each step, but where such strip has no tactile paving or uneven surface to it.

"It's important that your handrail continues. (...) when you come down a certain flight of stairs and (...) onto a flat platform that your handrail continues and that it goes flat and then it slips down again. At the very end when you come to the end of the stairs your handrail is meant to go out further than the last step, so that the person will come off the stairs safely."
(guide dog owner)

Tactile paving

There are multiple types of tactile pavement that can be used to support the navigation of people using long canes. Some types of tactile pavement inform the direction of the movement and guide long cane users to specific locations, other types inform there is danger ahead.

Most participants in the workshops still have some level of vision left, therefore it affects their experience in using tactile paving with a long cane. Whereas the bubble pavement informing danger ahead was cited as very important, the guiding strips were not deemed so important since all participants can still get some sense of direction by the vision they have.

"The bubble pavements at the traffic lights do help because they make me aware that there is a cross in there."
(long cane user)

"I don't really need the guiding strips"
(long cane user)



The use of bubble tactile pavement was cited as a crucial information at street crossings, not only to inform that there is a crossing there but also to inform the location of the traffic light buttons.

"(...) tactile pavement should be used at crossings."
(long cane user)

"The only way I knew [where the street crossing was] was because I had the tactile pavement to bring me to where the crossing was."
(long cane user)

The main danger in the use of tactile paving happens when the pavement is placed incorrectly. In such cases, the incorrect tactile pavement may confuse users of long cane or may even lead them into danger.

"In Dublin (...) they are putting a new pedestrian crossing, but they have the tactile paving there already and there's no traffic lights. That was a bit confusing."
(long cane user)

"I remember once in Dublin, when they were doing the new Luas route, they had actually put tactile pavement the wrong direction. (...) I went, I crossed, and [I was] actually in the middle of the road and cars were coming."
(long cane user)

An example of wrongly placed tactile pavement cited by one participant happens at the border of steps in public stairs. According to the participant, such improper placement of tactile pavement would impair the use of a long cane.

"The tactile would not be suitable on steps because (...) there is a certain technique that we use to be able to slide your cane off the step (...) I would hold the cane at a slight angle across my body, I would let it fall down to the step in front of me and then because there is a roller tip at the end of the cane it would just roll off the step. So, it is very important that the step has no ridge or curve. Sometimes there are steps that have a kind of



little rubbery finish on the edge of the step, which is a disaster
because then your cane doesn't roll out over the step."
(long cane user)

One of the most important points discussed by participants in the workshop is that tactile pavement, when placed, should be used consistently around the city and across the country. The main reason being that, even when guiding strips are not needed, for instance, they can still be used as point of reference when walking a given route.

"Change in tactile surfaces is essential when you're using a long
cane"
(long cane user)

In addition, one of the participants highlighted the need for tactile paving and other forms of guidance in railway crossings. According to the participant, users of long cane do not have any type of guidance in such crossings and need to rely on other people that happen to be at the crossing when they are there.

Color contrast

For people with low vision, color contrast between the road, the footpath and some key elements in the footpath are fundamental for navigation in the urban environment. Colour contrast in the pavement was cited as important particularly in: the edge of steps, street crossings, and where there is tactile paving.

"if you are going in or out of the premises that might have
several steps going into it. For somebody with a slight bit of
vision, if there is a strip across the edge of the step, it
distinguishes the edge of the step for you. So when you would be
either going up or going down, you would actually be able to
make it out."
(guide dog owner)

One participant cited that the best colours are the bright yellow and bright orange, as soon as these colours make a good contrast with their surroundings. A common complaint



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refers to surfaces where the colour is not so bright anymore and the contrast with its surroundings has decreased.

"There is another tactile paving that is used in some of the older places in the city and they [are] at a darker kind of terracotta, so they kind of blend in with the concrete."
(guide dog owner)

Colour contrast can also be a big issue for people with low vision trying to move during the night. The interaction between street lights and the different urban elements may impair mobility.

"if I was going into the city for a meeting at night time I would nearly always catch a taxi, because I do know that the street lighting in Galway city is quite bad I believe"
(guide dog owner)

Street crossings

There are multiple elements in street crossings that can facilitate mobility using long canes and guide dogs, or make it harder to cross a street. The elements cited by the workshop participants were: controlled crosses with traffic lights, arrow and tactile paving to inform direction of crossing, the availability of audible or vibration cues at traffic lights, use of flushed kerbs, types of street crossing with islands or raised crossings, and crossings at unhelpful angles.

Users of long cane and guide dogs have either low or no vision. Therefore, street crossings without traffic lights can be very dangerous to cross. Participants informed that when having to use a street crossing without traffic lights, they need to rely on their hearing or on members of the public to ensure there are no vehicles coming. So, if there is a vehicle coming and they could not detect it, they need to rely on drivers and cyclists to stop and let them pass. For those with a guide dog, the dog may provide further support in the detection of vehicles depending on the training of the dog.

[In a street crossing without traffic lights] "I would just have to listen and hope for the best, which is not great."
(long cane user)

"you depend on the on the public quite a lot when you can't see"
(guide dog owner)



"I have been in a situation myself where I have gone out because there was no car coming. I thought it was safe to cross. I didn't hear the cyclist or knew there was a cyclist coming. The next thing is the cyclist either zoomed out in front of me or out behind me and frightened the life out of me. We need to raise awareness that (...) if cyclists are coming along and they do see somebody with a guide dog or a cane that they are more mindful that they better slow down or stop"
(guide dog owner)

About an uncontrolled street crossing in a crossroads with high traffic:

"[In Galway] just up from Francis Street there where the Abbey church is. If you were going up towards the post office, there is a crossroads there. You go down Mary's street one side and you go over to Woodquays the other side. That's a very, very bad [uncontrolled] crossing there."
(guide dog owner)

One participant who also happens to have some level of hearing loss informed to prefer walking slightly longer distances rather than cross at street crossings without traffic lights.

Participants also cited the lack of controlled street crossings to cross the Luas tracks near Stephen Green's in Dublin or to safely navigate railway crossings in an independent manner. They informed that pedestrians often need to be visually aware of the Luas approaching, which, for them, is not a possibility.

When traffic lights are available, users of long canes need to get access to the location of the crossing and know in which direction they should cross. For that, participants cited the importance of having tactile pavement guiding them to where the traffic light buttons are, and in having an arrow at the top of the traffic light box informing the direction of the crossing.

"The long bit of the tactile paving will tell me which side the buttons [for the traffic lights] are."
(long cane user)



Owners of guide dogs, on the other hand, may not have an issue in detecting where the street crossings are if the dog is trained to do so.

"the guide dog (...) is trained to find the lights so he would know the difference between the crossings that would have the lights or if there was just [an uncontrolled] crossing"
(guide dog owner)

Having reached the traffic lights, users of long cane and guide dogs may still not be able to see the pedestrian lights changing from red to green. Therefore, participants expressed the need for having audible and vibration cues at crossings with traffic lights.

"At least you might hear the green man turning."
(long cane user)

"Sometimes Dublin is very noisy. If you put your hand on it [the traffic light box] when it is vibrating you know when [the traffic lights] are going to change. (...) You could feel it turning so you know it is safe to cross the road."
(long cane user)

"If the audible sound is not loud or if the wind or traffic is affecting the sound, I would often put my fingers on the pulse [in the traffic light box], just to make sure that I would feel it"
(guide dog owner)

The audible cue is the beep and "laser-type" sounds that inform if it is safe or not to cross the street. In addition to having such audible cues, the sound should not overlap with the sound of nearby street crossings. If all nearby street crossings have the same tone, it may be challenging for pedestrians relying on their hearing to discern which traffic lights are open for crossing and which are not. That tends to be a challenge faced by users of long cane and guide dogs at major road junctions with multiple crossings.

For those who cannot rely on their hearing, the presence of vibration at the traffic light box also provides the necessary information if it is safe to cross or not.

Next, provided that there is enough information to safely cross the street, participants also cited that the flushed kerb in street crossings support their mobility. The main reason is that the flushed kerb marks exactly where the crossing is and enables long cane users to cross without bumping on cars, for instance. However, as pointed out by some



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participants, it is really hard to use the flushed kerbs since all pedestrians choose to use the flushed kerb at the same time. As users of the long cane need some space to navigate using their cane, they may need to wait for all other pedestrians to cross before being able to cross by themselves.

"You can walk to [the tactile paving in the street crossing] with the cane. But people aren't moving. If you are in need of that to guide yourself (...) you may tip off someone [unintentionally] because they are just [not willing to move]."
(long cane user)

"They use [the flushed kerb at the street crossing] and kinda block you."
(long cane user)

Regarding the type of the street crossing, participants cited the challenges of moving through crossings with an island in the middle, and moving through raised crossings.

At some street crossings there may be an island in the middle of the crossing. If one side of the street has a flushed kerb, it creates an expectation that the other side would also be flushed. If the island has a raised kerb instead, it may cause an extra challenge for users of long canes and may be a hazard since long cane users need to measure the height of the kerb before being able to safely move onto the island.

"There might be like an island in the middle of the road (...) so you have to cross [that] before you get to the tactile pavement [in the other side]"
(long cane user)

"You go to cross and in the middle of the road there is a high path that you might not always feel the [height] of the path when you are using your cane (...) If you don't put your cane properly, then you can fall. You can miss it and you can fall over."
(long cane user)

There are also street crossings where the road is raised to the level of the footpath. Users of long cane and owners of guide dogs tend to use the raised kerb to differentiate between the footpath and the road, therefore, raised street crossings may be confusing



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and put them in danger. A user of a long cane or guide dog may start crossing the street while thinking they are still walking in the footpath. Two participants in the workshop cited having passed through this situation.

"My previous guide dog just walked out from the footpath right onto the road because there was nothing to tell the dog that he should have stopped (...) So that particular type of crossing is not good for guide dogs."
(guide dog owner)

"I find [O'Connell Street, in Dublin] a nightmare. There is a tiny little leap but it is a kerb and it is also the same colour as the road and the same kind of material, like a brick material I suppose, and it is a nightmare to walk."
(long cane user)

Last, one of the participants cited the importance of having both sides of a street crossing aligned to each other and slightly off the corner of the footpath.

"Quite a lot of [street crossings] are placed at the wrong angle where there would be kind of an angle at corners. (...) When we are trained with either our dog or our cane, we are trained to dent from the corner (...) [if] I was crossing a road, I would go slightly to my left, away from the corner before I would cross kerb to kerb, but there are quite a lot of crossings put at wrong angles. So that's where the planners and designers talking to people with lived experience would come in, would be a great benefit."
(guide dog owner)

Segregated cycle lanes

People who are blind or have low vision may not be able to see a bicycle coming in their direction, both on footpaths or at the street. Therefore, it is important that there are segregated cycle lanes separated from the footpath. In addition, participants in the workshop note that there should be some tactile division between the footpath and the cycle lane, otherwise users of long cane may step into the segregated cycle lane and not notice it.



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"Cyclists cycling on the footpaths [is a problem] (...) there needs to be cycle lanes for the cyclists so they are safe, because (...) I suppose they don't feel safe [at the roads] and they hop onto the footpath"
(guide dog owner)

Fast/Slow Lane

People who are proficient in using the long cane are able to walk fast while scanning for any hazards. Therefore, one participant cited interest in having a division of fast and slow lanes in footpaths where people who can move fast go into the fast lane and people who need to move at a slower pace can go into the slow lane.

"If I have the cane I walk really fast and sometimes you are trying to walk fast (...) but people are still in front of you and you can't get through, so it kinda [decreases] your confidence to where you are going to. So I think that [having fast/slow lanes in footpaths] would be a great idea."
(long cane user)



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Mobility in the presence of street furniture

This category of urban elements refer to items that are added on top or around the footpaths. These items are usually called 'street furniture'. Street furniture can be fixed to the location such as light poles, rubbish bins or letter boxes, or they can be mobile such as tables, chairs or restaurants' sandwich boards.

Fixed street furniture can both decrease or increase mobility using the long cane. When blocking the way, street furniture may create a hazard or an inconvenience. However, such furniture may be used by long cane users as points of reference for navigation, helping them to identify where they are at any specific time.

Trees, overgrown shrubberies or head-level signage

Guide dogs would support avoiding obstacles whereas long canes are useful to detect obstacles at the ground level, however obstacles at head level are hard to detect. Therefore, overgrown shrubberies, tree branches, or head-level signage can be a source of hazard if no warning is placed around them at floor level.

"If you are walking along the path and there are trees that are overgrown or are hanging down they would often hit you or you will hit them off because you wouldn't see them."
(long cane user)

"Overhanging hedges and bushes is a disaster because you have been walking along and you can't see what's up, you know? Whether it's a dog or a cane, you have bang you into a bush (...) you get the bang in the face. So the overhanging bushes are a problem."
(guide dog owner)

Talking about head-level signage, one participant in the workshops cited how dangerous it is in times of election, when there are multiple signage boards around the city. Pedestrians with low vision or blind may bump their heads at all signage that is placed at head level or that may have fallen and are now at head level.



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When discussing trees, in addition to being a head-level hazard, trees placed on footpaths can also occupy a narrow footpath or their roots may damage the footpath. If they block narrow footpaths, they may force pedestrians to step out of the footpath and into the road. As users of long cane and owners of guide dogs may not notice cars and bicycles coming, stepping out of the footpath can put them in danger.

"There's trees also (...) on the pavement, but it is so narrow"
(long cane user)

Also, the roots of certain trees may damage the footpath and increase the chances for tripping and falling (see the section on uneven (broken) pavement for the risks associated with uneven footpaths).

"In Dublin, in the North Circular Road, there is a very thin, very narrow path. But there are lots of big trees along the path (...) [and] they have the roots grown up, so the path is very lumpy and goes up and down."
(long cane user)

The ideal situation would be to have trees only in wide footpaths, where their branches are high enough to not cause any accident, their roots are well hidden under the pavement, and there is tactile information around the tree announcing there is a tree at that location.

Bollards

Bollards were cited by one participant as a danger for blind people, in particular when placed in the middle of the footpath and/or with no indication that there is a bollard there.

"Another thing that (...) happened to myself a long time ago, outside of a particular building they had bollards but they had a chain going from one bollard to another. (...) You can't negotiate a chain that's across in front of you"
(guide dog owner)



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Mesh and grids covers

Covers for ventilation or used on top of the roots of trees are usually not a challenge for users of certain types of long cane. If there is, however, anything passing the grid (e.g. a small tree root) then it may cause a falling hazard.

"I would not have any issues with [mesh and grid covers] because the type of cane I use would be like a roller cane. So, unless there's something sticking up, it wouldn't affect how my cane works or helps me."
(long cane user)

Mobile furniture (sandwich boards, tables, chairs, wheelie bins)

Mobile street furniture tends to be a big challenge for the people who have low vision, use a long cane or walk with a guide dog. They can block the footpath and, as the furniture may have their location changed on a daily basis, they cannot be used as points of reference for navigation.

If sandwich boards need to be placed at the footpath, one participant suggests that they are placed towards the edge of the footpath. However, the raised kerb is also sometimes used for guidance so it is not clear if this would be a general solution for the placement of such boards.

"A lot of the street furniture is in at the wall, which I don't think it is great. (...) I walk out at the wall because I feel more comfortable because poles and stuff tend to be at the edge of the path."
(long cane user)

"Normally I would walk at the wall. If there is someone else there then I wouldn't walk at the wall. So [mobile street furniture in the middle of the path] could be a bit dangerous for me."
(long cane user)



"Many [sandwich] boards are right on the streets or restaurants. If you are walking along with your cane, you can hit them off or you might not see them in time and you get hit by them."
(long cane user)

[In a narrow footpath] "there are poles and signs and stuff. (...) they are not close to the road, they would not be quite in the middle, but they are a bit close to the middle of the path. (...) If I wasn't using my cane I would be on top of it before I saw it and especially if there is someone else on the path."
(long cane user)

Users of long cane and guide dogs may also have difficulties in avoiding tables and chairs placed in the footpath. Even if they notice that there are tables and chairs, they may still not be able to identify how to move around them.

"I was in town yesterday and I think I bumped into three or four tables when I was trying to walk through a certain area."
(long cane user)

"I remember a friend of mine had a guide dog at the time, but (...) the guide dog had gone in and out through the chairs [placed outdoors]"
(guide dog owner)

In addition, users of long cane are concerned about disturbing or hurting people using these tables and chairs.

"There's people sitting there [at the outdoor tables]. They are very helpful and they are trying to tell you how to get around, but sometimes there's not enough space for you to be able to use your cane to get in and around those tables around the streets."
(long cane user)

One solution proposed by the workshop participants is to have barriers around the chair and tables so that users of long cane and guide dogs can detect it and know how to move around them.

"If street furniture has to be there, having something around it would make it less dangerous and easier to navigate."
(long cane user)



"If there is a rope or something [around the tables then] you can use the side of the curb for your cane when you are going past. So you are not hitting after tables, because if you hit off the tables you are hitting off a person who is sitting there."
(long cane user)

"A barrier around the table and chairs [where] they're kind of kept within a specific area, rather than being just left out free standing on the footpath, I think is probably a better design"
(guide dog owner)

Finally, participants also cited the problem with rubbish bins placed at footpaths and vehicles (cars and bicycles) parked in the footpath.

"[if] it happens to be bin day (...) our bin men usually just empty bins and throw them anywhere at all and never think of any of the [people] using the footpath"
(guide dog owner)

"the hazards for a long cane user would definitely be bicycles tied to whatever, sandwich boards outside shops or premises (...), and the street furniture. Again with those particular things the dog would take you around them."
(guide dog owner)

Mobility using private vehicles

This category of urban elements focuses on mobility using private vehicles. Although people who are blind or have a certain degree of low vision are not able to drive, they may still be eligible for a badge for parking at disabled car parks.

Designated car parking (disabled parking)

One participant commented on the use of disabled car parking when travelling with a family member. The participant was very complimentary of car parking bays that have a yellow box around the car so that the passenger can leave the car safely.



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"If I was going to Galway city with a member of my family that would be driving me (...) Some of those [disabled car parking] bays are very well designed in that they do give you (...) that safe area where you can get out."
(guide dog owner)

Mobility using public transport

This last category refers to urban elements that promote mobility using public transport such as taxis, buses and trains.

Bus stops

The access to bus stops and the attitude of bus passengers were the two key points participants cited about this mode of public transport.

Users of long cane and guide dogs may not be sure about where to stand in a bus stop or how to walk around it. Should they stay in front or behind the bus stop? When walking around the bus stop, should they walk on the inside around the back part of the bus or walk towards the front of the bus? One participant in the workshop stated that sometimes, by moving around in the wrong direction someone may just hit the head at the side mirror of the bus, or the bus driver may just approach the stop and accidentally hit the side mirror at a person's head.

In addition, if not familiar with a location, people with low vision or blind may not know if they are in the correct bus stop for the bus they wish to take, or if the bus that is arriving is the correct one. In such cases, participants stated that there is no information to support people with vision impairment in Irish bus stops and they need to rely on the public around to guide them.

"I never know whether I'm at the right [bus stop] or not. So I'll always ask somebody."
(guide dog owner)

"It is very difficult when there are a lot of buses coming into that particular point, particularly on a wet day and there are so many people around. I have to be asking so many times."
(guide dog owner)



In addition to the elements in the urban environment, participants cited that the attitude of bus passengers or the bus driver may make a bus journey a bit difficult. Even when people's interest may be in helping a person using a long cane or guide dog, one participant commented about being pushed into the wrong bus or being pushed into a seat inside the bus. In general, the best approach to support any person would be to ask if they would like any help and how one can support them, rather than just assuming a person's needs and pushing them around without their consent.

When inside the bus, the challenge then becomes knowing when is the right stop to leave the bus. Although some buses already have audio to inform the next stop, sometimes the audio is not at an appropriate volume.

"I have been on the bus where the audio has been so low that you can't hear it if there's a lot of talking going on on the bus. I have asked drivers (...) and they [say]: 'oh! I have no control over it.'"
(guide dog owner)

One of the participants also added that map-based technologies can support people who are blind or have low vision to situate themselves while moving on a bus.

Luas

The main challenge in using the Luas as a means of transportation is to know if one is going in the right direction. People with low vision may not be able to see the information about the next train and in which direction it is going. People who are blind would have the same issue.

"If you don't have someone sighted with you(...). You are not sure if you are on the right side of the Luas."
(long cane user)

"As a non-sighted person you can't always see the screen where it says where [the Luas] is going to.(...) the print in the screen is so small to see if you are on the right side."
(long cane user)

One solution proposed during the experience sharing workshops was to have audio announcements at the stop to inform where the next train is going to. Participants said that while such information is available inside the Luas, it is not available before someone enters the carriage.



"Audio [announcements] would help. Someone would be saying where it is going to, by audio. Because on the Luas they would say which stop (...), but there is nothing when you are standing at the stop waiting for the Luas."
(long cane user)

Railway station

The experience in using trains as a means of transportation are slightly different from those using the Luas. In the case of trains, the main challenges for people with low vision using a long cane or a guide dog for mobility are: identifying where the door is, identifying where the button to open the door is, and identifying what is the correct carriage they should embark.

There were two different experiences among participants. Whereas participants were very complimentary of the service of Irish rail when support is arranged in advance, there were also complaints that such support needs to be booked too much in advance. If a person with low vision decides to embark the train alone, then they may see themselves in life threatening situations. One participant discussed that someone may not be able to identify where the door is and fall into the train tracks, in the space between carriages, or in the space between the train and the platform.

The main outcome of the experience sharing workshop was that the support service provided for embarking trains is exceptional when used, but the current train infrastructure does not allow for independent mobility for people with low vision or blind.

Conclusion

In this document we report the experience shared by users of long canes and guide dogs who participated in the Crowd4Access experience sharing workshops organised during July 2020. This document also highlighted some of the urban elements that make mobility easier or harder for users of long canes and guide dogs, while also listing the types of urban elements that users of long canes and guide dogs would like to see featured in a map of the urban environment.

The fixed urban elements cited in this document was used by the Crowd4Access project to plan our data collection about the accessibility of Irish cities. Such data collection started later in 2020 through a citizen crowdsourcing initiative.



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Note that we have interviewed a very small number of users of long canes and guide dogs, who were kind to share their experiences in the context of this project. Therefore, we do not claim that this document is a definitive guide for the mobility of users of long canes and owners of guide dogs or that it represents the whole range of experiences of users of long canes and owners of guide dogs around Ireland. Note also that guide dogs can be used by people who use a wheelchair for mobility and such a group was not represented within the participants in our workshops. Instead, we acknowledge that this is a first step towards understanding the challenges in mobility using long canes and guide dogs. Finally, we invite other initiatives to build upon this work and explore the accessibility of the urban environment for people using different modes of mobility.

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