

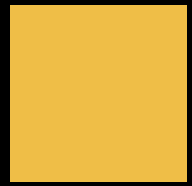


Physical Distancing

A Behavioural Science Toolkit to Aid Physical Distancing and People Movement in a Covid-19 World

July 2020

The Behavioural Architects



Introduction

A significant part of the strategy to tackle the Covid-19 pandemic and reduce transmission of the virus is social distancing or, more aptly, physical distancing. Whilst there has been a considerable focus on communications to motivate physical distancing, leveraging behavioural science to encourage adherence, less attention has been paid to **how to help people maintain physical distancing and dwell time in busy, high traffic areas such as high streets and stations.** Right now we all know we need to keep our physical distance but behavioural science shows there is often an intention-action gap due to the contexts in which we find ourselves. We have every intention of maintaining physical distance with others, but it's not always easy to ensure that happens. Behavioural science not only helps us understand what happens in a particular context to mitigate the desired behaviour, but also give us tools to make it more likely to happen; such as structuring or restructuring the environment to ensure people don't get too close to one another. This thought piece and toolkit were inspired by an award-winning project completed in late 2019 for Transport for New South Wales (Australia) which looked at how to optimise people movement and reduce crowding issues in stations using behavioural science.

Part 1: Why People Find It Hard to Follow COVID-19 Physical Distancing Rules

What does behavioural science tell us about why it is hard to get people to follow instructions and signs, and therefore to maintain physical distance?

In densely populated environments such as high streets, stations, airports, shopping centres and on public transport it can be difficult to ensure a smooth flow of movement, and people – often unintentionally – may end up blocking areas, creating bottlenecks and bunching up. Multiple insights from behavioural science can help to explain why these issues arise, including:

- **We are distracted and on autopilot when on the move:** We often move on autopilot, daydreaming, or distracted, perhaps solving a problem, talking on the phone or looking at our phone, browsing social media or accessing information. Browsing or texting on our phone makes us the most distracted, compared to talking – it's called **DALAP or Distracted While Looking At Phone syndrome.** Research by the University of Calgary in February 2020 found that 45% of pedestrians are distracted by browsing on their phones when crossing streets in cities. Related

injuries account for one in every 25 road safety incidents. **People browsing on their phones also move more slowly, for instance, taking longer to cross the road.** Texting decreases rates of looking left and right prior to and/or during the crossing of a street. Those aged 13-29 are most at risk of injury as the majority of people in this age range tend to browse their phone whilst moving.¹

Neuroscientists have found that, contrary to popular belief, we are not as adept at multi-tasking as we believe. The human mind is simply not equipped to switch back and forth between different tasks; it actually responds and switches sluggishly and is more prone to error, meaning it takes much longer to do the tasks overall.² Neuroscientist Daniel Levitin says: **“Each little thing that you're trying to multi-task with is a separate project file in the brain, and you're not paying attention to all of them at once.”**³

¹ <https://www.dailymail.co.uk/health/article-7961881/Texting-scrolling-touchscreens-sent-pedestrian-injuries-soaring-800.html>

² <https://www.apa.org/research/action/multitask>

³ <https://blogs.cfainstitute.org/investor/2019/05/15/daniel-j-levitin-multi-tasking-doesnt-work/>

- **Information is not salient:** “Visual pollution” from too much signage can be overwhelming. We tend to notice what stands out and is most salient, but if there is too much clutter- too much trying to grab our attention- our eyes won’t be drawn to anything in particular and we’ll experience information overload. We might also fail to notice signage painted on the ground if the area is so busy that ground signage is obliterated by other people.
- **Lack of simple ‘System 1’ signage:** When people are moving around public places, either on foot, or by bike or car, effective signage is essential. Yet signs are often written in illegible type with poor contrast, or with a high density of information written in overly complex language requiring time and mental energy (System 2) to comprehend and act on. Electronic signs sometimes have moving, changing messages making them even harder to absorb. This problem can then create rebound issues as people look to solve the lack of clear direction in other ways, such as following the crowd, assuming the majority of people are going in the ‘right’ direction. This can often result in people ending up in the wrong place- on the wrong platform, in the wrong queue, at the wrong exit and having to back-track against the flow to retrace their steps.
- **Lack of feedback on our behaviour:** Behavioural science shows that timely and personalised feedback on an activity or a task can make people more motivated and responsive. In public places, we typically have a simple goal to get from A to B as quickly and smoothly as possible, and in the new normal, we are supposed to do this while remaining as physically distanced as possible. Yet in real-time (the best scenario) it’s hard for people to get the right feedback to ensure that happens, . On the ground, as we move through urban spaces, we have no bird’s eye view of where bottlenecks and congestion are and how we might avoid them . For example, having exited a train, it’s hard to know which exit staircase is the least busy or, while waiting for a train, which carriage is going to have space.
- **Lack of default routes:** People automatically tend to take the easiest or most attractive route rather than the designated route. Acknowledging this, the innovative Gehl Architects analyses the factors which contribute to attractiveness and ease of movement: the position of and number of litter bins, the tactile surfaces of pavements, the availability of seating areas, lowest risk of fear of or threat of crime and insecurity, lighting levels and the need for lighting and even if wind funnels through certain areas and how and where natural light

and sunlight falls through the day. They take note of where people jaywalk, how long the wait is at traffic lights, the areas and streets they avoid, and what obstacles they have to negotiate. They track the literal behavioural journey of urban dwellers.⁴ And they design urban layouts accordingly.

We also know that some environments are more difficult to navigate than others. One 2012 study conducted by Colin Ellard, Deltcho Valtchanov and Kevin Barton at the Urban Realities Laboratory at the University of Waterloo in Toronto, monitored how people moved through two different virtual streetscapes. One area was very ordered, systematically laid out like the streets of New York or Milton Keynes (high intelligibility in the figure), the other was more organic, meandering and chaotic, like London (low intelligibility). They found that journeys through the systematic areas were stereotyped and efficient, with low levels of arousal and attention. Journeys through the more chaotic areas took longer, with more hesitation, arousal and effortful attention.⁵

⁴ <https://www.marketingsociety.com/the-gym/using-behavioural-insights-make-cities-more-people-friendly#HISap9oGGZkLfmPx.97>

⁵ <https://journals.sagepub.com/doi/abs/10.1177/0013916512466094>. Image source: Bloomberg <https://www.bloomberg.com/news/articles/2014-03-05/the-amazing-things-you-can-learn-from-a-virtual-city>

Part 2: From Understanding to COVID-19 Physical Distancing Actions

Using behavioural science concepts we can gently shape or nudge behaviour to keep people moving in a steady flow, with little or no dwell time, as spaced out as possible, at the same time discouraging antisocial, potentially unsafe behaviours so as to create more cohesive, kinder behaviour.

Stopping issues such as people going the wrong way or backtracking against the flow to retrace their steps, blocking high traffic areas or creating bottlenecks such as at ticket barriers, bunching up in unsafe ways or slowing others down by moving at different speeds can be tackled with the application of the following well-tested and frequently used concepts:



Build salient visual cues



Prime behaviour using sensory effects



Ensure cognitive ease



Change the default



Give feedback



Reframe information



Communicate the social norm

- Build salient visual cues:** When we are moving from A to B, we seek out salient clues for the most efficient and easy way to get to B. In urban environments **signage is key, but so is placement.** What is most salient to the human eye? We all know of choice architecture in the supermarket aisles where we tend to be drawn to the products at or around eye level. Urban design for movement works in a similar way; Gehl's team, mentioned earlier, observe and note what is in view at ground level on the street (that's 72 degrees from eye level). This is the optimum – unless you are a child – it means it's visible above the crowd.
- Give feedback:** To keep people moving or doing what you want, **they need feedback which provides a reason for an instruction.** For instance, helping them avoid over-crowded areas. Finland's Museum of Architecture created an outdoor mirrored ceiling which played back an aerial view of the area. While in this context the design was purely aesthetic, in a high traffic area it could be a clever way to enable people to see where crowds are clustering.

We can also **give people feedback which lets them know we recognise and appreciate their efforts.** For example, thanking them for keeping moving or for avoiding a certain route.
- Ensure cognitive ease:** For signs to be effective, they need to be easy and quick to read - **able to be scanned and understood in a single glance.** Behavioural scientists call this promoting cognitive ease. As Sarah Lazarovic, behavioural designer and illustrator says: *"The primary goal should be making, in a fraction of a second, the desired behavior easy to do. To this effect, the most salient messaging is very likely the simplest."*⁶

Signs don't even need to use words - symbols, icons and simple graphics with colour are just as, if not more, effective if universally understood symbols are used.
- Communicate the social norm:** Our behaviour and decision-making are often **swayed by what we see others doing, or what we are informed the majority do.** Most of us want to fit in and be accepted by society. And in busy public areas, where our actions are on display, we have little desire to break from the norm. Therefore, to keep people moving, letting people know what most other people do, or what society generally expects them to do, can help influence behaviour.

⁶ <https://behavioralscientist.org/slowing-down-to-design-a-better-sign/>

- **Prime behaviour using sensory effects:** We know that while people are aware of social aspects of their environment e.g. staff, other passengers and crowding, they are less consciously aware of ambience e.g. temperature, light, sound or scent. Even if consumers are conscious of a stimulus, something like music playing, they are not necessarily aware of its influence on their actions (and certainly don't admit to it!), meaning their influence cannot be easily measured in a conscious way (Trimble, 2017): "the complexity of sensations is revealed" (Spence et al, 2014). Therefore, **changing the ambience of an area is a subtle, yet simple way to encourage certain behaviours.**

Music has been found to have a significant impact on people's behaviour in public places, even though we are often not consciously aware of the soundscape. For example, classical music is used by some London underground stations to create an ambience to deter loiterers and maintain a calm environment.⁷ A 2014 study found evidence that a more rhythmic stimulation can enhance movement performance. So maybe speeding up the tempo of classical music at busier times could keep passengers moving along briskly.

Further, incorporating simple sensory elements into the design structure can reduce the need for excessive signposting. For example, **changing underfoot textures signal to the person that they should pay attention.** So, if the floor texture changes at a point where the person has to make a decision which direction to take, or if they need to exercise caution (eg. coming up to an area where the floor might be slippery) this can be an effective substitute for a signpost. Equally, texture can help generate continuous movement. Sally Augustine, founder of Design With Science: "*People ... like to stay on the same surface, so if they're walking on carpet, they have a tendency to keep walking on that same carpet.*"

- **Change the default:** When behavioural scientists talk of changing the default, they mean changing the option that is the automatic choice. We can always choose not to go with what has been selected for us, but often it's the best option and it's usually the one that is easiest to do.

In terms of people movement, it can mean simple things like moving towards the doors which open automatically. We're all familiar with airport shuttles which only open doors on one side so passengers can exit without having to negotiate the

passengers about to board on the other side. Whilst this is also for security reasons, it promotes the easy flow of passengers too.

- **Reframe the information to build meaning:** We respond differently to how information is presented to us; **by changing the frame we change the meaning and the subsequent behaviour.** In busy public places, we are often faced with many signs directing us to 'do this', 'do that' - often without any rationale. For example, 'Danger' or 'Keep Off'. Yet reframing the message around a clear reason can help to motivate people to conform and respond to the message. For example, reframing common congestion points such as the main access point of platforms (often the busiest areas) as 'priority boarding areas' helps people realise that they need to wait elsewhere.

⁷<https://van-us.atavist.com/ambient-indifference>

A Behavioural Science Toolkit to Aid Physical Distancing and Keep People Moving in a Covid-19 World

Behavioural challenges and issues tackled by the toolkit:

- **To prevent people travelling or visiting at the same time**, causing congestion and making physical distancing impossible
- **To design System 1 style signage**
- **To stop the cross flow of people** which can cause significant slowdown in movement and congestion e.g. in any urban setting, on transport platforms and concourses, at pedestrian crossings, in retail or leisure spaces etc
- **To prevent people loitering and blocking key high traffic areas** e.g. at the bottom of stairs or escalators, at the start of a train or bus platform, by ticket barriers or machines - **tackling the fact that these are the key areas where people have a tendency to pause, stop.**
- **To stop people gravitating towards one access point** thereby causing unnecessary congestion and dwell time **when other access points are available**
- **To stop people running and rushing to catch a train or bus**, a practice which is not only dangerous but can disrupt people flow- **causing congestion and delays for everyone**
- **To prevent people from bunching up in one area and failing to use** all the available space e.g. along a platform or in a public area
- **To break people out of autopilot** - to make them aware of changes in the environment or context that need their attention
- **To specifically manage the phone browsers** who tend to walk more slowly, pay less attention, get in the way and can slow everyone down, building congestion.

BE Concepts used in the toolkit:



Build salient visual cues



Ensure cognitive ease



Give feedback



Communicate the social norm



Prime behaviour using sensory effects



Change the default



Reframe information

COVID-19 BEHAVIOURAL CHALLENGE

1

To prevent people travelling or visiting at the same time, causing congestion and making physical distancing impossible

BEHAVIOURAL SCIENCE INSPIRED SOLUTION

Change the default



Give feedback



BEHAVIOURAL CHANGE IN ACTION - EXAMPLES

Singapore carried out a number of initiatives to reduce crowds and high numbers on public transport at peak times, by incentivising travel at alternative times, **changing the default**. For example, a ‘**Travel Free Mornings**’ programme implemented in 2013 encouraged commuters to travel earlier (between 6am-7am) and relieve morning peak hour crowding. 7% of riders shifted out of the peak time commute and more would have done so if they had more flexible working hours. In 2017 this shifted to discounted fares.⁸

Some Singapore stations **introduced a traffic light system to reduce crowds on platforms**. These lights are placed at the entrance of stations so commuters can check the crowd level on the platform before tapping in, providing real-time **feedback**. This provides commuters with information early enough for them to adjust their plans if possible eg. rent a bike or walk, or stall for a little by getting a coffee and continue shopping. 60% of commuters said they referred to the lights in the survey. The initiative has been rolled out to a further 10 stations.⁹

Transport for London recognised people’s efforts to do what was approved of by society at the outset of the pandemic by thanking them in advance. Signs saying “Thank you for keeping key workers moving” gave people the **feedback** that most people were limiting their use of public transport, ensuring it could run smoothly for key workers.

⁸ <https://www.bloomberg.com/news/articles/2014-07-25/singapore-s-early-morning-free-transit-program-has-been-a-huge-success>
⁹ <https://www.todayonline.com/singapore/10-more-mrt-stations-get-traffic-lights-showing-crowd-levels>

COVID-19 BEHAVIOURAL CHALLENGE

2

To stop the cross flow of people which can cause significant slowdown in movement and congestion e.g. in any urban setting, on transport platforms and concourses, at pedestrian crossings, in retail or leisure spaces etc

BEHAVIOURAL SCIENCE INSPIRED SOLUTION

Build salient visual cues



Change the default



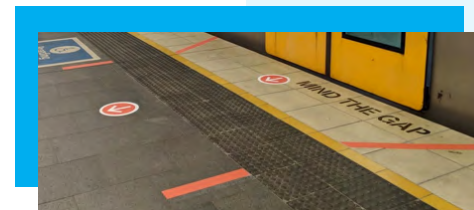
BEHAVIOURAL CHANGE IN ACTION - EXAMPLES

On the Sydney Trains T1 line, people movement on stairs was often chaotic and slow due to cross flows. We encouraged people to keep left on the stairs **by providing salient visual cues - bright floor colours to denote an up and down flow.**

We also provided **salient visual cues** to help people line up either side of opening carriage doors. This ensures that there is a clear area for the people exiting the carriage and that the boarding can then proceed in an orderly fashion and avoiding the two groups having to push past each other.

In 2015 Tokyo Airport, introduced **salient, visual cues** - colour coded pathways with directions marked on the pathway itself to direct opposing flows of people. **A red track for arrivals and blue for departures.** The motive for this creative approach was born out of budget limitations - they could not afford signposts and illuminated signs.¹⁰

Many airport shuttles are designed so that train doors open first on one side for exiting. Then, once all passengers have alighted, the doors on the other side are opened to allow passengers to board, **changing the default.** This ensures that there are never any cross flows of passengers boarding and alighting at the same time as there usually are on traditional trains.



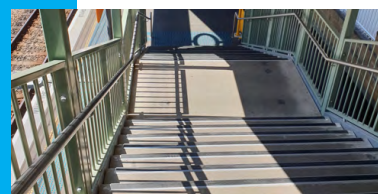
¹⁰ <https://prty.jp/work/terminal-3>

COVID-19 BEHAVIOURAL CHALLENGE

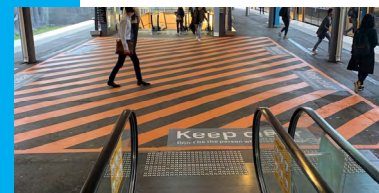
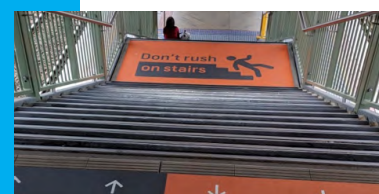
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To prevent people loitering and blocking key high traffic areas e.g. at the bottom of stairs or escalators, at the start of a train or bus platform, by ticket barriers or machines - tackling the fact that these are the key areas where people have a tendency to pause, stop.

BEFORE



AFTER



BEHAVIOURAL SCIENCE INSPIRED SOLUTION

Reframe information



Give feedback



Build salient visual cues



BEHAVIOURAL CHANGE IN ACTION - EXAMPLES

On the Sydney Trains T1 line people had a habit of coming to a halt once they reached the platform, leading to bunching at one end. **These high traffic areas were reframed as keep clear areas, using salient signage** to communicate this. This encouraged people to move along the platform and free up more platform space in the process.

On the Sydney Trains T1 line, signs often lacked clarity on the rationale behind an instruction: so we **added clear rationales or reasons for instructions and provided feedback to people on their actions**. This helps people feel more motivated to adjust their behaviour.

On the Sydney Trains T1 line: coloured salient visual cues and shortcuts for areas to avoid such as hazard symbols or hatched markings. These simple illustrations and high contrasting colours capture people's attention and encourage them to act accordingly. The Incheon International Airport Terminal 2, South Korea used vertical light fixtures to pull people through the terminal. Long, thin and reflected by the floor they create an arrow-like illusion, a salient visual cue which negates any further need for signposts. Passengers feel confident they are on the right track and keep moving.¹¹

¹¹<https://www.gensler.com/projects/incheon-international-airport?l=featured>

COVID-19 BEHAVIOURAL CHALLENGE

4

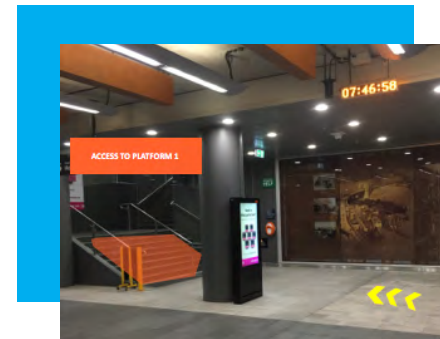
To stop people gravitating towards one access point thereby causing unnecessary congestion and dwell time **when other access points are available**

BEHAVIOURAL SCIENCE INSPIRED SOLUTION

Build salient visual cues 

BEHAVIOURAL CHANGE IN ACTION - EXAMPLES

On the Sydney T1 trainline we increased the salience of alternative access options - other lifts and stairs - using colour cues to help spread out and divide the flow of people going in the same direction at the same time. These salient visual cues can help motivate people to take stairs rather than lifts, identify disabled access routes and make it clear where each access point takes you.



In Copenhagen Airport, there was congestion as passengers exited through a single lane into Arrivals. A second lane was not noticed. Using neon green tape to demarcate the primary lane and making the previously unused lane wider they spread passengers out more equally across two existing lanes. They also marked the floor of both lanes with 'take the exit at the end' so people felt confident that they were going where they wanted.¹²

¹²https://read.oecd-ilibrary.org/governance/behavioural-insights-and-public-policy_9789264270480-en%23page387

COVID-19 BEHAVIOURAL CHALLENGE

5

To stop people running and rushing to catch a train or bus, a practice which is not only dangerous but can disrupt people flow - causing congestion and delays for everyone.

BEHAVIOURAL SCIENCE INSPIRED SOLUTION

Communicate the injunctive social norm



BEHAVIOURAL CHANGE IN ACTION - EXAMPLES

On the Sydney Trains T1 line we communicated the injunctive social norm to make people aware that pushing and rushing to get on a train is not a behaviour society approves of. The sign below is a reminder of how that behaviour will be perceived by fellow passengers.



COVID-19 BEHAVIOURAL CHALLENGE

6

To prevent people from bunching up in one area and failing to use all the available space e.g. along a platform or in a public area

BEHAVIOURAL SCIENCE INSPIRED SOLUTION

Build salient visual cues



Ensure cognitive ease

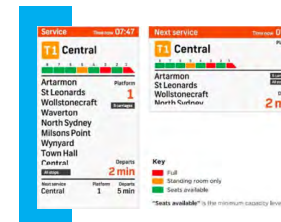


Give feedback



BEHAVIOURAL CHANGE IN ACTION - EXAMPLES

On the Sydney Trains T1 line they added an **easily recognisable salient visual cue - a traffic light system** - to indicate to customers the location of the less crowded carriages on the incoming train. These indicators were visible on the digital information boards to show less busy carriages on the next incoming train.



Transport apps like City Mapper embed journey advice with more cues to make a journey easier. They suggest tube carriage points to enter, exit, and where you might get a seat based on congestion data. **Personalising instructions means the commuter can remain in autopilot and experience cognitive ease when making micro-choices in their movement.**

The city of Marseille worked with Foster & Partners to redevelop its old port. Part of the redevelopment included the creation of an outdoor mirror canopy - the Vieux Port Pavillion. Although it was installed for aesthetic reasons, by reflecting people underneath, it provides real time feedback on crowd clusters. The mirror enables people to see from a bird's eye perspective and grasp the location of empty spaces instantly.¹³

¹³ <https://www.designboom.com/architecture/foster-partners-vieux-port-pavilion-marseille/>

COVID-19 BEHAVIOURAL CHALLENGE

7

To break people out of autopilot - to make them aware of changes in the environment or context that need their attention

BEHAVIOURAL SCIENCE INSPIRED SOLUTION

Prime behaviour using sensory effects



Build salient visual cues



BEHAVIOURAL CHANGE IN ACTION - EXAMPLES

Music: **Playing up-tempo music has been found to make people more alert** because it enhances mood and sparks focus. Listening to music while walking is also found to create an 'auditory bubble' which helps block out unwanted stimuli in people's surroundings and helps them hone in on the information they need. For example, on the London Underground some stations play classical music to help keep people moving.¹⁴

Lighting: In Vancouver Airport they **dim the lights a little in the evening to synchronise with people's circadian rhythms**. By late evening bright lights can be overwhelming, which can cause people to move more chaotically and make them less able to process signs.

Tactile alerts: In Brighton, urban designers used tactile feedback to alert pedestrians to shop thresholds and potential hazards when remodelling a street.¹⁵

Similarly, at many major UK roundabouts cars and cyclists pass over surfaces made intentionally rough and bumpy on approach to a roundabout to alert them to the potential hazard and need to slow down.

In Copenhagen Airport they developed salient visual cues to remind passengers to make sure their passport was to hand on the right page, when queuing at immigration. This ensured people arrived at the front of the queue prepared and ready. They implemented a **traffic light system using colour coded vinyl stickers on the floor. As passengers get closer to the passport counter, the floor goes from red to yellow to green, and at each step, there is a different instruction such as "Open your passport to the photo page"**. As a result, the line moves more quickly as the extra 5 seconds saved for each person adds up when there's a plane full of people to go through. This system reduced the waiting time in peak hours by 18%, and ensured that 100% of passengers had their passports ready at Passport Control.¹⁶

¹⁴<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4251309/>

¹⁵<http://landezine.com/index.php/2011/04/new-road-by-landscape-projects-and-gehl-architects/>

¹⁶<https://liquidminds.dk/work/copenhagen-airport-nudging-campaign/>

COVID-19 BEHAVIOURAL CHALLENGE

8

To specifically manage the **phone browsers** who are not paying attention, get in the way and can slow everyone down, building congestion.

BEHAVIOURAL SCIENCE INSPIRED SOLUTION

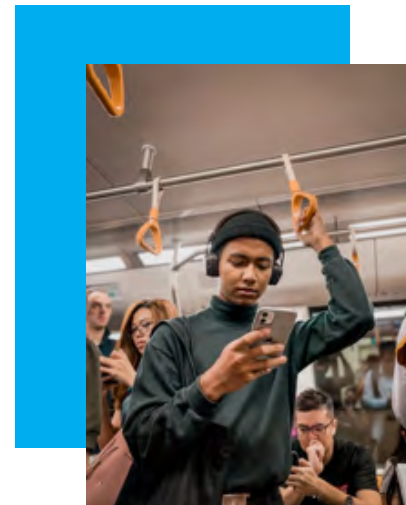
Change the default



BEHAVIOURAL CHANGE IN ACTION - EXAMPLES

The city of Manchester **created 'slow lanes' designed specifically for mobile phone browsers**. Similarly, a UK shopping centre introduced a fast lane to ease 'slow rage' ahead of Black Friday to facilitate the two types of walkers; active and passive.¹⁷

One city in Japan is currently considering banning phone use in some streets.



¹⁷<https://www.forbes.com/sites/marciaturner/2018/01/02/malls-fast-lane-eases-walker-feelings-of-slowed-rage-while-shopping/%233d7946704347/>

Keeping People Physically Distanced and Moving in the COVID-19 World

From Part One of our toolkit, you can use the behavioural science contextual understanding to diagnose what might be preventing desired behaviour. What might be getting in the way of people's good intentions? With this deeper understanding of current behaviour, and your specific contextual challenges defined, you can choose and apply the best fit behavioural science inspired interventions listed in Part Two.



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