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Measure No.19: Walking



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Improving walking infrastructure and promoting schemes to encourage greater use of this mode of travel.

Cities making changes to the walking environment (and its relationship to other modes of travel) can provide clearer and more acceptable choices for those making short journeys. Interventions that support individuals and groups in choosing to walk as a travel mode may be delivered in support or as freestanding initiatives.

19.1 Context and background

Walking is an element of all journeys, however they are undertaken. Walking is though an option for the whole journey for most people when making short trips. Walking is also a leisure pursuit, with the focus more on aspects such as the environment and health. Consequently cities can pursue initiatives in a number of areas to support walking with different goals in mind. Improving health of the population might be one area of concern, whilst discouraging short journeys by motor vehicles in a city centre to improve air quality might be another. Making a city more attractive to visitors through being seen as a 'walkable city' is another potential objective driving action as is reducing traffic around schools to improve road safety. Whatever the goals, walking interventions will broadly split into those that improve the physical environment in which to walk, and those which 'encourage' people to do it. This measure review will consider both aspects.

The review considers ways of encouraging more walking through specific schemes such as children walking to school, walk-

Key messages:

- Evidence suggests that increased walking can flow from improving the walking environment and/or targeting information at individuals.
- Interventions to increase walking are often considered at a community or small scale geographic level, assuming walking journeys are shorter than trips made by other modes.
- Most evidence focusses on the health benefits of walking to individuals. However, there is an expectation in some studies that local economies will benefit from more walking trips.
- Walking interventions may require enhancements to urban design features and infrastructures. Such changes can potentially be expensive and difficult to justify purely from the benefits of additional walking.
- Where Cost Benefit Analysis of improving pedestrian facilities (installing pavements for example) has been undertaken, benefits are drawn from reduced car use and air pollution.
- Businesses place more emphasis on the quality of the walking environment, or public realm. Investment here as opposed to walking itself is seen to provide economic benefits in respect of customers and rental values.

Potential interventions

- 'Walking bus' schemes for schools and other destinations for children
- Walking promotions targeting better health, and supporting health care providers
- Walking promotion through challenges or gamification
- Infrastructure changes to facilitate and encourage walking

ing for health programmes, as well as infrastructure changes, i.e. urban design features. Whilst urban design can facilitate walking it also often presents barriers to walking, as pedestrians have to cross roads, and walk alongside traffic. Thus a context to walking environments is presented below. However, urban design is addressed elsewhere too, in Measure No.4 Access restrictions (e.g. pedestrianisation), and Measure No.23 Inclusive urban design (e.g. shared space). Encouraging individuals to walk to work may also enter into the discussions in Measures No.9 and No.10 (Travel Planning), therefore such schemes have not been included in this review.

19.2 Extent and Sources of Evidence

There are a number of case studies around the urban design of cities that report an impact on increasing walking levels, although the detail in terms of numbers or cost benefit analysis is often not included in the publication. Given that it is argued that without “good” walking infrastructure, and places to walk to at a reasonable distance (e.g. shops, facilities, leisure), then other interventions presented will need this basic infrastructure in place in order for the intervention to have an effect.

There are many publications that claim physical activity, which includes walking, is beneficial to health¹, but there are only a few studies that present actual evidence of interventions with an impact on walking levels. One of the challenges is separating out evidence from research that considers walking and cycling together where new infrastructure is shared.

The majority of the evidence presented here is UK based, although one paper provides evidence from New Zealand, and a couple from the US, with the research conducted since the start of the twenty first century and mostly published in academic journals.

19.3 What the Evidence Claims

There is some evidence to indicate that levels of walking can increase at an individual and collective level through a number of personal and community interventions, as

well as through changes to infrastructure. As indicated above, it can be argued that an infrastructure suitable for walking needs to be in place before undertaking any interventions aimed at behavioural changes. Evidence from Melbourne (Australia), for instance, has indicated that re-designing the urban framework to make the city centre more walkable had a significant effect on the numbers of walking trips in the area². While many reports consider urban design issues to benefit walkers, there are fewer studies that demonstrate the effect of the investment on walking over time. However, issues such as pedestrianisation are dealt with in measure reviews No.4 and No.23, and some of these may have scheme evaluations.

The relationship between physical activity and health has focused health practitioners on ways of encouraging people to walk for health benefits. Public health interventions in particular have been successful in using walking to encouraging greater activity, but most of these trials have been small scale and short time-frame (i.e. less than a year)³. Children’s health and activity level is also a driver for measures to increase the number of children walking to school. These studies are focused on the benefits to individuals (and reducing levels of cars near schools) rather than wider economic outcomes of more people walking on the local economy. However, there is some evidence to indicate that increased levels of walking can have a positive effect on the local economy⁴.

The specific interventions discussed below start with those aimed at changing behaviour of individuals and communities, and then move on to the impact of urban design and new infrastructures on levels of walking.

19.3.1 Encouraging Walking for Active Lifestyles

Encouraging walking more generally within the population can benefit people’s health and wellbeing through greater activity, but might not be linked to specific health interventions at the individual level as above. Three interventions are reported here that were aimed to promote walking in the general population and are

indicative of studies seeking to test interventions that change behaviour.

The first, 'Doorstep Walks', provided printed information to the public about a series of leisure walks from specific locations in the small British city Salisbury⁵. These were placed in publically accessed locations (e.g. medical centres, libraries, etc.) for people to pick up and use. The evaluation indicated people who had received the walking route information pack had increased their level of walking.

The second 'Beat the Street' utilized RFID technology as a way of encouraging and measuring walking within a community⁶. The Beat the Street concept was piloted in Caversham (a suburb of the UK city of Reading) as a feasibility study for the technology, and subsequently extended into Reading. The concept has been developed into walking competition projects in other UK and US cities⁷. Beat the Street Caversham was promoted through schools, doctors' surgeries, local business and community groups and local media and it had 5,651 people participating, of which 2,627 were schoolchildren. Sixty seven percent of participants reported they had walked more because of the project, but the outcomes in Reading have yet to be reported. The evaluation methodology consisted of analysing data generated by the RFID card swipes from individuals, which logged 255,015 journeys between two swipe points, and an exit survey with a sample of 1,300 adults, along with qualitative feedback from participants. The second phase (Reading) was jointly funded by the Clinical Commissioning Group and local authority transport and public health teams.

A suite of interventions to promote walking within a community was also undertaken in High Point, Seattle (US)⁸. This third example is more complex than the other two, as there are multiple interventions associated with the urban regeneration of this location and some of these are discussed under the heading Urban Design below. In terms of encouraging behaviour change to increase walking levels the concept of 'walking groups' as an effective social environmental strategy to promote physical activity was utilized. In 2006, the adult community action team identified a

1-mile path around the new central pond as a walking trail. Staff of community-based organizations who were partners were trained as group leaders, including bilingual coordinators with proficiencies in Cambodian and Vietnamese. Five residents also served as walk leaders. Leaders recruited public housing residents (all residents older than 14 years were eligible) through fliers and word of mouth. Leaders made reminder phone calls, checked walkers in, led stretching exercises, and timed the walk. Walkers were encouraged to meet then-current physical activity guidelines (e.g. 30 minutes of moderate to vigorous exercise most days per week) and walking recommendations (10,000 steps per day). The walking groups met 5 times a week during weekday, evening, and weekend sessions. Participants generally walked for 1 hour around the pond although distances varied depending on the capacity of each walker. For example, 1 resident began by walking with an assistive device, later switched to a cane, and, near the end of the intervention, walked on her own. Groups ranged in size from 10 to 30 participants. Walkers received T-shirts, pedometers, and prizes for meeting individual walking goals. Phone call reminders, fliers, and incentives such as raffle tickets helped sustain participation.

The research team used surveys of walking group participants before and after the interventions to evaluate the impact of the improvements to the built and social environments. The evaluation period was March through May 2007. Baseline data were collected prior to implementation of the walking groups, pedestrian advocacy campaign, and informational campaign. Follow up data were collected 3 months after the walking groups and informational campaign, but before all the pedestrian infrastructure improvements were completed. Fifty-eight (97%) of the 60 group participants completed baseline surveys, and 53 (91% follow-up rate) completed exit surveys. Surveys included measures of minutes walked per day, physical activity, general health, and social connectedness. Translators were used where necessary, and participants received an incentive for completing both surveys. The significance of pre-post differences was assessed with the paired t test or the McNemar test via

Stata version 10 (Stata Corp, College Station, Texas). The final sample size had a power of 0.8 to detect a difference of 22.6 minutes per day of walking, with $\alpha=0.05$. The participants increased number of minutes walked per day increased from 64.6 to 108.8, and this was through walking for exercise and errands, but not for walking to work, school, or bus stops. More participants met the recommendation for moderate physical activity after the intervention, and general health improved, with participants reporting fewer days when physical health and mental health were not good. There was an added benefit of increased perception of social connectedness, but the perceptions of environmental factors associated with walking did not change, other than a modest decrease in concern about crime and safety.

A less conclusive study in the US considered the effectiveness of a community based intervention in a rural area, arguing that people in such locations were less likely to have access to everyday pedestrian infrastructures such as pavements (sidewalks) and shopping malls⁹. Like the studies above, it used targeted material to individual participants as well as card readers to measure the numbers of trips undertaken. Self-reported activity levels increased with the intervention, but the quantitative evaluation indicated there was no statistically significant impact on walking levels.

The evidence of such walking interventions does demonstrate that connecting with the community is important, and therefore the scale may need to be geographically meaningful to gain a sense of local belonging within a community. Targeted materials help direct potential walkers, but there are technological opportunities for walking trips and distances to be measured as indicated by the Beat the Streets initiative. The relationship with the community is important in the next discussion of children walking to school too.

19.3.2 Children Walking to School

The concept of a 'walking bus' has been used to encourage more children to walk to school. Published evidence comes from New Zealand (Christchurch) that exam-

ines the Zippy Walking Bus¹⁰, but it should be noted the idea is based on a concept developed and used in the UK. The impact of the Zippy Walking bus was evaluated 18 months of start of the intervention. The evidence demonstrated that 19.5 fewer cars came to the school following the setting up of the walking bus, but much of the evidence demonstrates that the community of committed parents and volunteers were critical to the success and continuation of the walking bus. There is an evidence gap around the barriers to using the walking bus by other parents, and what the numbers are as a proportion of the school population. It also notes that this type of project tends to be successful in more middle-class neighbourhoods.

Like the 'Doorstep Walks' and other workplace interventions, 'Travelling Green' is a school based activity that promotes walking by providing printed information¹¹. It was designed to fit into the school curriculum with 'buy in' from the school. The curricular component of the intervention was a curricular resource guide for teachers aimed at 5- to 14-year-olds to support the delivery of school travel projects within the classroom. The Travelling Green pack contained a set of active travel resources designed to be used by children and their families at home to engage them in the project outside the formal curriculum. The evidence is based on 60 participating primary school pupils (aged 9-10 years) from two schools. The research measured how far pupils walked before and after the study, and demonstrated that the mean distanced walked increased with the intervention. The researchers claim that the intervention was effective in achieving an increase in the mean distance travelled by active mode and a reduction in the mean distance travelled by inactive mode on school journey.

These examples provide two key approaches to encouraging walking to school. Both require the school to be actively involved, although the organisation of the walking bus can be based within the parent/volunteer community, whereas any links to the school curriculum need close partnership with the school.

19.3.3 Urban design

Urban design can engage many different features to promote walking¹², and as noted above pedestrianisation etc. are discussed under different measure headings. Urban researchers in Finland argue that reshaping the urban environment around mixed development can have an important impact on the walkability of the city¹³. The cost benefit analysis of improving pedestrian facilities (installing pavements / sidewalks) has been based on studies in the US, which demonstrate the potential for reductions in car use and air pollution, and other predictions have been made in the UK for wider pavements, greater frequency of pedestrian crossings, dropped kerbs, and seating, arguing a net benefit although the actual evidence is scant¹⁴.

The Gold Route in Sheffield (UK) is an example that demonstrates where urban design that has improved the walking environment has generated a positive outcome in terms of increase pedestrian numbers and reduction in vehicles¹⁵. Here the local government strongly supported the initiative that redesigned the link between the railway station and the city centre by demolishing a tower block and re-shaping of the station and created new crossing points on the ring road. The new walking route included water features and public art to make it more aesthetically attractive. It also had active support from the local government and other key organisations (e.g. Sheffield Hallam University, heritage charities, etc.) which included financing. Measured outcomes given were more than doubling of pedestrian movements, and a significant reduction in vehicles, although information on how this evidence was generated was not provided. The iConnect project examined the impact of new bridges specifically for cyclists and walkers that connected communities, using three locations in the UK¹⁶. In April 2010, survey packs were mailed to 22,500 adults randomly selected using the edited electoral register (which covers around 60% of adults aged 18 years and older) and living within 5 kilometres by road of the core Connect2 projects. The 3,516 individuals returning the pack (16% response rate) were mailed follow-up surveys in April 2011 and April 2012. After

excluding a small number of individuals who had moved or had unreliable physical activity data (change of ≥ 900 minutes/week), the 1-year follow-up study population consisted of 1,796 participants (51% retention, 8% of the population originally approached) and the 2-year study population consisted of 1,465 participants (42% retention, 7% of the population approached). After 2 years more people living within 1 Km used the facility than after 1 year, with combined walking and cycling increases. The evidence does not pull out the impact solely on walking.

There are many ways in which the urban infrastructure for walking can be improved. These two examples demonstrate the importance of place-based connections (e.g. two communities, transport infrastructure and place of work/retail)

19.3.4 Conclusions drawn from the evidence

Increasing levels of walking is often considered at a community or small scale geographic level. The assumption is that walking journeys usually are shorter distances than by other modes. Communities are engaged as a way of supporting a collective change, and a method of connecting with individuals who can then be targeted with more bespoke information. There is some evidence that changes can be made to levels of walking either by improving the walking environment and/or targeting information at individuals. However, the evidence is limited in terms of duration beyond short scale interventions, or the infrastructure being in place long enough to measure substantial change. Community based interventions like the walking school bus demonstrate that the community needs to maintain commitment over time for ongoing success.

19.4 Lessons for Successful Deployment of this measure

None of the examples above overtly consider the transferability of the intervention or the upscaling within their intervention. However, the organisation developing the 'Beat the Street' concept has developed it for a number of other case locations which are ongoing, and evidence of the success

of these developments has yet to be produced. The High Point example demonstrates how projects aimed at increasing walking levels within particular communities can evolve alongside other regeneration activities, and as such this type of community based activity has the potential to be transferred to other locations. The community nature of this project, and also that of walking buses (to schools), require buy in from community partners who are able to actively participate and drive the initiative within the community. To this end, it requires time and effort to galvanise and motivate people, as well as sustain the activity over time especially where volunteers are involved. The High Point example demonstrates the need to be sensitive to the needs of diverse communities (e.g. ethnically diverse), and tailored facilitation is needed for each community setting. The concept of the walking bus has transferred to other locations (e.g. to New Zealand), but it is not ubiquitous across all communities, and may be affected by social class.

Urban design and infrastructure improvements, such as installing a new bridge, are context dependent in terms generating pedestrian journeys. Conceptually the idea of connecting communities should be transferrable to other locations, but the design element would need to be sensitive to the local setting. Infrastructure is a durable physical asset, and not reliant on community support as in the other examples, but it is reliant on maintenance to ensure usability over time.

19.5 Additional benefits

As well as the evidence of economic and financial benefits of interventions discussed above, there are a number of additional benefits that are claimed for these policies:

- **Health Benefits:** The main benefits of walking are often seen in terms of improvements in health and fitness. Health benefits might be both physical and mental.
- **Community benefits:** Participation in community-based walking programmes can bring the added benefit of increasing participants' perceptions of social connectedness, and of being part of their community.

19.6 Summary

Many of the examples around encouraging more walking are small scale and the impact measured is often over a short period of time and does not follow up over a longer period. Community based activities that are run for longer periods of time, compared to shorter term trials, need energy from volunteers to maintain the momentum of the activity. Without these key players, the community walking activity could come to an end (e.g. walking buses to school).

Urban design features and infrastructures, therefore, are more durable once they are in place acting as a constant enabler to walking. However, these may benefit the already active, rather than creating active travel as with those interventions focused on encouraging walking amongst individuals and community groups.

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