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Freeways in Los Angeles, California, mean that walking across town is not an option, preventing one of the best ways to maintain cardiovascular health.

## PUBLIC PLANNING

# Designs fit for purpose

*Better thought-out town planning and interior design can create healthier environments, but how to effectively implement the best designs remains uncertain.*

BY DUNCAN GRAHAM-ROWE

The migration of people to towns and cities in the United Kingdom during the nineteenth century led to squalid conditions and rampant outbreaks of cholera and typhus. Sanitary reformers successfully campaigned for legislation requiring new homes to have running water and adequate drainage. Nearly a century-and-a-half later, we are at a similar juncture: cardiovascular disease is rising at a rate that threatens to bring healthcare services to its knees<sup>1</sup>, and urban environments are once again threatening the wellbeing of the people.

Evidence is mounting that the modern lifestyle of working and playing in front of screens — combined with readily available energy-packed food — has people exercising less and eating more<sup>2</sup>. In fact, a recent study concluded that inactivity plays a part in nearly a third of the disability years lived by people with ischaemic heart disease<sup>3</sup>. There are also more subtle forces at work in the way towns and buildings are arranged. Living in suburbs has practically forced people to drive a car to go anywhere, says Gregory Heath, an epidemiologist and public-health scientist at the

University of Tennessee at Chattanooga. The positioning of stairs and elevators, the distribution of supermarkets, and the way that suburbs form through unchecked expansion rather than planning can each have a major impact on cardiovascular health.

The long-term cost of sedentary lifestyles will be measured in billions of dollars, says Bengt Kayser, director of the Institute of the Science of Movement and Sport Medicine at the University of Geneva in Switzerland. And yet, says Kayser, if people were to walk for just half an hour each day, the benefits to their health and to national economies would be dramatic. In fact, for those most at risk, walking even 10 minutes a day can improve health<sup>4</sup>. “Physical exercise is like a magic pill,” says Kayser.

The problem is that poorly planned urban landscapes discourage exercise and healthy eating. Can a twenty-first-century revamp of the urban environment encourage people to live more active, healthy lives?

## PUSHING PEOPLE

One of the biggest contributors to this problem is one of ergonomics. The office desk may seem less sinister than the noxious substances

and mechanical looms of nineteenth-century factories. Nevertheless, sedentary lifestyles are taking a toll on human health. Getting people to take the less easy option — such as taking the stairs instead of the lift — can make a huge difference. Although providing alternatives to stairs is necessary for disabled access, buildings should be designed so that stairs are a conspicuous and attractive option for those able to use them. The bouts of exercise involved in climbing a set of stairs are a boon to cardiovascular health.

Unfortunately, Kayser says, offices and public spaces often encourage people to take the easier option. The lifts are usually in a prominent position, whereas access to the stairwell is tucked away. And lifts tend to be placed right next to the stairs, offering an easy ride. Still, Kayser says, many people will take the stairs if that is the shortest route. One approach being tried is to make stairs more fun with posts of humorous or encouraging messages, or by designing the steps to be interactive, such as the piano-like steps leading out of the Odenplan metro station in Stockholm: climbing up and down the steps makes music.

Another tactic is to implement policies that encourage commuters to use public transport,

a mode of travel that tends to involve more walking and cycling than does the car, says David Ogilvie, co-investigator in the Centre for Diet and Activity Research at the University of Cambridge, UK. Possible ways to achieve this are by making public transport more attractive through the combined use of congestion charges on cars — an automatic charge when a vehicle enters the city centre, as happens in London — and the introduction of exclusive lanes, paths and trails for cyclists.

Indeed, a comparison by Heath's team of two poor neighbourhoods in Tennessee showed that young people with access to a two-mile length of extra-wide urban trail that could accommodate both cyclists and pedestrians were nearly twice as likely to be physically active than those living in the neighbourhood lacking such an amenity<sup>5</sup>. But Heath stresses that town planners shouldn't expect such results just by slapping down a low-quality bike path. The Tennessee trail, he says, was designed to be safe, aesthetically pleasing and well lit to discourage crime, while connecting local communities with nearby schools, a recreational centre, library and shops. It's also well maintained to stop foliage limiting visibility. Rest areas and open space along the route "translates into more eyes on the 'street' path, which deters crime and threats to safety", says Heath.

Ogilvie agrees, pointing out that there are countless examples of poorly thought-out cycle lanes that do little to promote cycling — including some that have poor visibility, an ambiguous right-of-way or are located too close to parking spaces, with the risk of car doors taking out a passing cyclist. Rather than promoting cycling, people are being put off. "We already know a lot about the benefits of physical activity to health," Ogilvie says, "but we know less about the effects of the environment on physical activity." What's more, he and colleagues have reported evidence of such measures leading to more active lifestyles, yet the improvements were modest, with people making on average only eight additional cycle trips per year<sup>6</sup>. That's to be expected, says Ogilvie, in part because people tend to stick to travelling patterns.

### IS BIGGER BETTER?

In 2007, the Australian government issued guidelines for 'liveable neighbourhoods' to encourage physical activity as a part of daily routines. "What's happening in Australia, and to some extent in the US, is people are looking for affordable housing so they look on the fringes of cities," says Billie Giles-Corti, a social epidemiologist at the Melbourne University School of Population Health. The problem is that people are then forced to drive everywhere because there is not yet any infrastructure such as public transport and local amenities.

To address this concern, the state government of Western Australia issued planning



**Musical stairs: a chance to tiptoe a tune attracts walkers at Stockholm's Odenplan subway station.**

guidelines aimed at creating urban environments that encouraged walking, cycling and public transport. "What you really want is to increase [population] density," says Giles-Corti. As long as density is low, she says, public transport and other local services will be poor and residents will have to drive more. Only 17% of Australians walk enough for it to benefit their health — a statistic that hints at opportunities for public-health improvement, says Giles-Corti. "Active transport is generally habitual while recreational walking is volitional." It's better, she says, to "get people active as part of their day rather than simply a recreational activity".

One tactic might be for policymakers to incentivize businesses and transport companies to extend networks to low-density areas on the outskirts. Based on current trends they would be sound investments because population densities are only going to increase, says Giles-Corti. "By 2050 as much as 70% of the world's population will be living in cities," says Giles-Corti.

### THE FOOD FACTOR

Physical activity is only part of the story of how buildings and infrastructure affect health. Charles Abraham, professor of behavioural change at the University of Exeter Medical School, UK, argues that we should be putting more emphasis on understanding the energy content of the food our environment makes available. Of particular concern, says Heath, is the emergence of vast urban areas, with low-income residents, that lack traditional shops or supermarkets. According to a 2009 report by the US Department of Agriculture's Economic Research Service, as many as 11.5 million low-income people in the United States — about 4% of the country's population

— live more than 1.6 kilometres from a fully stocked supermarket as opposed to a convenience store<sup>7</sup>. Such distances severely limit access to healthy food, leaving residents on a diet of junk food found in local shops. These risk factors for cardiovascular disease could be avoided through planning policies that encourage urban locations for farmers' markets, community gardens and even mobile markets, Heath says.

Furthermore, billions of dollars are spent each year trying to persuade people to buy unhealthy foods — and this barrage of advertising often works. Brian Wansink at Cornell University in New York has made a career out of highlighting what he calls "mindless eating". Wansink studies how supermarket layout, food packaging and even the way food is presented on a plate can influence diet. His research group recently demonstrated that sales of healthier food could be boosted in a school canteen by making healthier options such as salads or fruit more convenient to buy<sup>8</sup>.

Even for those seeking healthier food it can be a minefield out there. Better labelling can make it obvious how healthy a product is based on its fat, salt, saturated fats and sugar content. Foods high in sugar and saturated fats could also be taxed higher to help fund public-health services. "These measures would greatly reduce consumption of unhealthy food without preventing food and drink manufacturers from making a profit," says Abraham.

What worries health policymakers most are the hard-to-reach populations. Even in cases where policy leads to some improvements, to what extent will these reduce cardiovascular disease in the people who are least active? Most studies to date have not identified who benefits most from intervention, says Ogilvie. Is it those most at risk, or people who were already fairly active in the first place and needed little encouragement to increase their activity levels? That, says Ogilvie, is the important question. ■

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