

Health as a Strategic Leverage towards Sustainable Cities: A Framework to Understand, Prioritise and Communicate Inter-sectoral Synergies of Health- promoting Measures in Urban Areas

—

Laura Thomas
Ganesh Babu R.P.
Marianne Lefever

Introduction

Urban health is back on city agendas around the globe as city governments and citizens aim to transition towards positive health for everyone in the aftermath of the global Covid-19 pandemic. An individual's health is a complex interaction between their biological predisposition, their behaviour (lifestyle choices), socio-economic conditions, and the environment they live in. To generate a positive health outcome, all three components must be addressed, as given in Figure 2 (Prüss-Ustün et al., 2016).

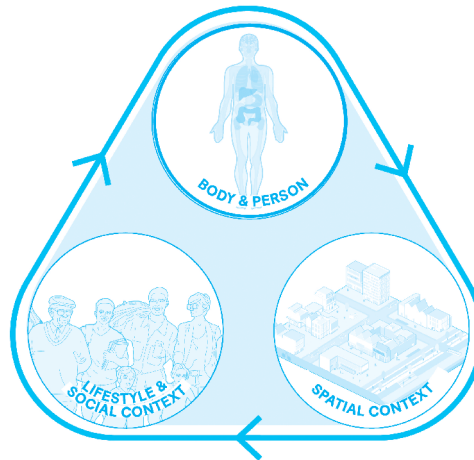


Figure 2. Healthy Urbanisation Tripod. © PosadMaxwan, 2018

Research in the field of urban health has unequivocally established that health is linked to and influenced by an individual's immediate environment (Brusseau, 2019). The strong correlation between positive spatial interventions and increased health benefits has been discussed broadly (Fróes & Lasthein, 2020; Pisoni et al., 2022; Grant, 2019; Barton et al., 2003; CEI, 2018).

Urban designers have come up with many design solutions and policy measures on spatially intervening in cities to promote the health and well-being of their citizens. Most recently, the authors of this paper developed such solutions and integrated these in *A healthy city beyond cycling: A practical guide to building healthier cities* (PosadMaxwan, 2021), which contains numerous insights about the influence of the built environment on health including inspiring examples that have already been realised and health-promoting measures in concrete spatial strategies for local, regional and national governments, such as the vision for *Gezond Brabant* ('Healthy Province of Brabant', the Netherlands) or *Gezond Zuid-Holland* ('Healthy Province of Zuid-Holland', the Netherlands). However, in practice, planners and policymakers have been struggling to implement these ideas and turn them into reality.

So far, the main problems encountered in practice have been:

1. Health is seen as yet another positive transition that will require additional space, resources, and investment – next to all the other transitions such as climate, mobility, and energy that cities are working towards. As such, the impression policy makers have is that there is not enough capacity within city governments to work on urban health.

2. Achieving a positive health impact requires cross-sectoral collaboration, since health is interlinked with many other conventional city services. Most city governments do not have the organisational setup to facilitate such cross-sectoral collaborations.
3. As with most policy measures, there is a need to quantify the health impact of measures to help prioritise a starting point and justify any investment at all. This can be difficult in real world scenarios where there are too many variables at play.

This paper will share practical insights learnt from the field and propose a new lens – based on the authors’ experience – through which to consider urban health. The paper employs this lens to imagine a new type of policy framework that can be used to adequately tackle the abovementioned problems. The first outlines of this framework are sketched in this paper.

The paper is built along the lines of the core messages which correspond to the three main problems described above:

- › Health is never a standalone ambition
- › Health: a strategic leverage for urban transformation
- › Follow the energy

Health is Never a Standalone Ambition

Health is an integral urban planning consideration in the quest for broader sustainability and liveability objectives. One of the main issues identified by the authors in endeavouring to implement health measures is that urban health is seen as yet another transition. It requires additional space, resources, and (time) investment next to all the other transitions cities are already working on. This can lead to competition between proposed projects and the need for prioritisation – if things land on the table in the first place. In the many cases the authors have identified in their practice, this meant health was pushed to the background for perceived lack of time. However, the authors believe health does not have to compete with other priorities. Although urban health and related spatial measures have to date often been tackled separately, positive health impacts are also achieved through measures that simultaneously benefit other transitions.

For instance, most spatial measures towards climate adaptation or mobility transition also have a direct or indirect positive health impact when designed for it from the start. Some of the examples are the Roc Boronat street in Barcelona, Spain, part of Barcelona’s ‘Superblock’ project, in which car space is reclaimed by slow traffic and places for lingering (Figure 3) and a boulevard in Mechelen, Belgium, which forms a central axis running through the city centre and is designed largely as shared space (Figure 4).

There are hardly any spatial health measures that do not also benefit other domains. One way to understand the relationship between urban health and other domains is to create a visual overview of the direct and indirect interrelations between different transitions and spatial measures. A potential approach to visualising these is by drawing an impact wheel. The focus is on the interrelations between different measures. For example, Figure 5 shows the measures towards improving a cycling network and how it can have direct and indirect health impacts. (Figure 5).



Figure 3. Roc Boronat street, Barcelona. © Ajuntament de Barcelona, 2019



Figure 4. More than 1km-long shopping, pedestrian and cycle zone in Mechelen. © PosadMaxwell, 2014

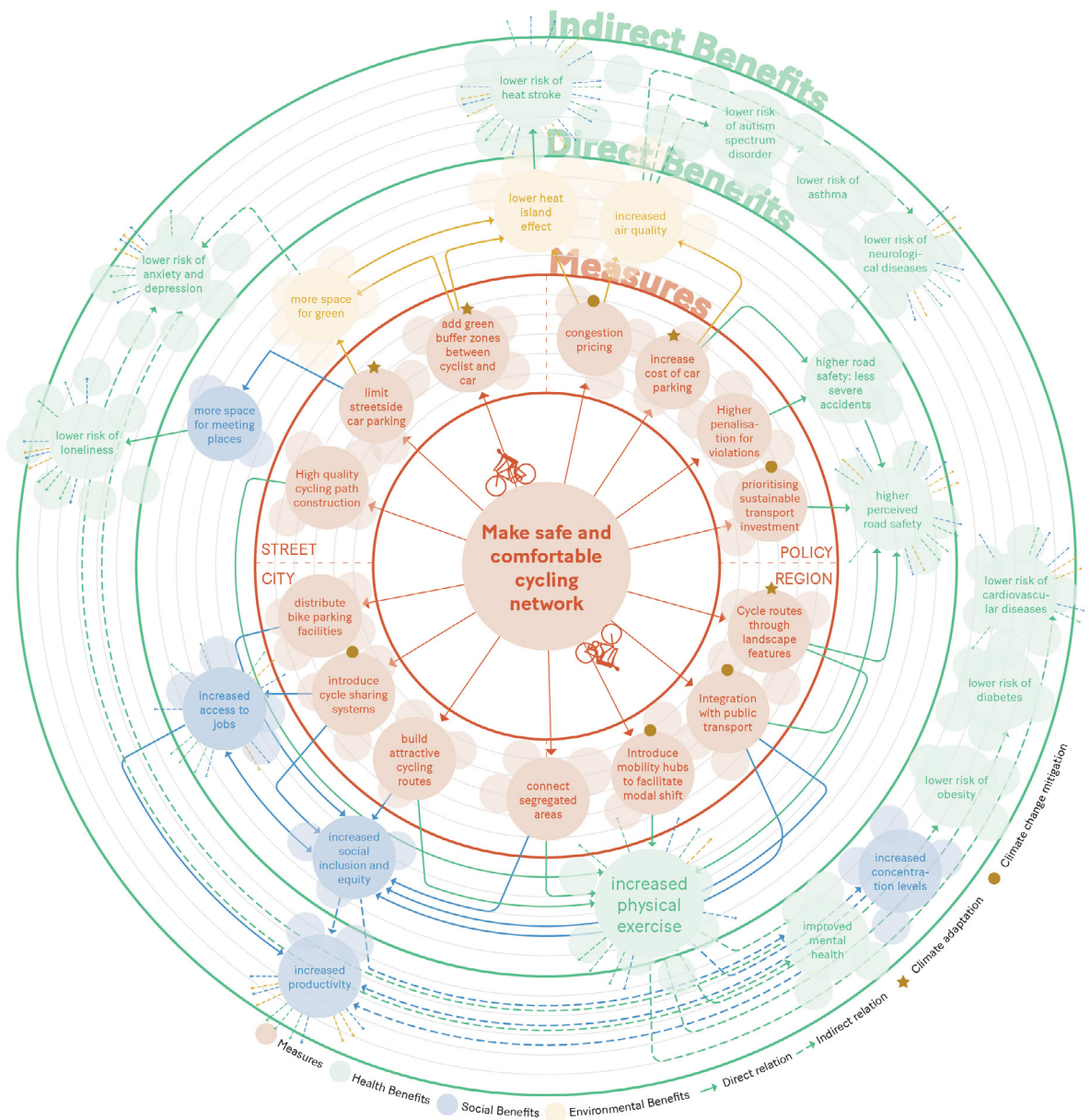


Figure 5. Healthy Cities Impact Wheel: Impact wheel illustrating the connections between spatial measures for a specific ambition and their direct/indirect benefits. © PosadMaxwan, 2022

The impact wheel starts with a specific ambition in the centre, in this case making a safe and comfortable cycling network. The ambition leads to various possible spatial measures that can help achieve this in the first band. These measures are also distinguished by their interconnectedness to climate change mitigation and climate adaptation to illustrate how spatial measures seldom have one isolated benefit. In the second and third band, the direct and indirect benefits are identified. The colours signify the different domains, and the lines denote strong or weak observable links. The impact wheel helps to illustrate how measures in other domains almost always lead to a direct or indirect health benefit too. It should be noted that the illustration does not paint a complete picture with every possible benefit but should be viewed more as a starting point to convey the idea. The impact wheel is backed by substantial academic research on the various topics, such as heat island effect (Smargiassi et al., 2009), air pollution exposure (Zheng et al., 2015), nature exposure in relation to mental health (Barton & Pretty, 2010), and walkability in relation to social capital (Leyden, 2003).

For an inner-city brownfield development in the Netherlands, the authors ran a session with the client exactly on this topic of standalone health measures. An extensive list of spatial measures promoting positive health was compiled. A larger and cross-sectoral team from the client worked through this list with the question: What do you recognise or already work on in your own field? In this online work session on the redevelopment of a brownfield area, each participant was asked to place a circle in their domain's colour next to the spatial measures that benefit health (in the three columns on the left) that they recognised within their own discipline. The outcome was that all urban health measures were cross-referenced with at least two other domains (Figure 6). The client had just never looked at it from the health perspective before.

Although health is never a standalone issue, working on other urban transitions does not automatically reap health benefits (Portney & Sansom, 2017). To activate the co-benefits, it is important to understand the extent to which the built environment impacts health and deliberately plan and design for it. Investing in an active mobility network might encourage physical activity but it will only have a net-positive health impact if that network is decoupled from the main air pollution arteries (usually the car network). Otherwise, there is a significant risk that physical activity will be promoted mainly in areas with high air pollution rates, as in the case in the province of South Holland (Figure 7).

With access to tools such as the impact wheel or others that illustrate these correlations, it can become increasingly easy for designers, planners, and policy makers to identify the overlap. Understanding the extent of the co-benefits between health and other domains is the first step towards planning and designing for combined positive outcomes. In the authors' experience, it is therefore more important to build this expertise and let a department or experts function as consultants on other domains, rather than set up isolated projects on urban health promotion.

This approach to health as a perspective and process embedded within other domains rather than a standalone entity can help alleviate pressure on the public domain and public funds and simultaneously create faster results. But it does require strong cross-sectoral collaboration and bringing the social and physical domain closer together. One way to do that is to consider health benefits as a strategic leverage to speed up other transformations in the public space.

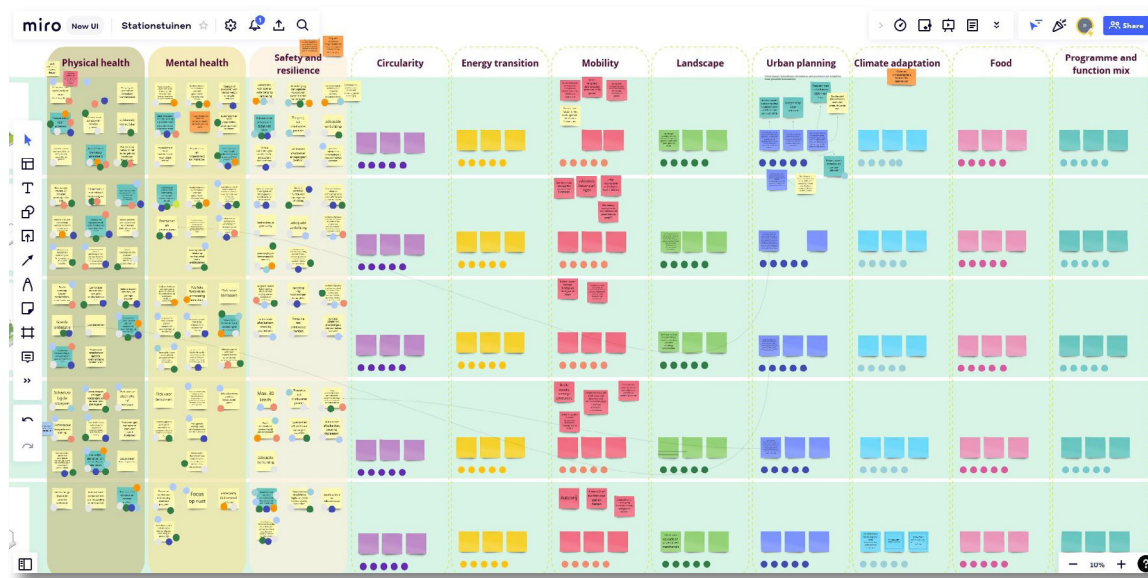


Figure 6. Screenshot of online whiteboard tool Miro. © PosadMaxwan, 2022

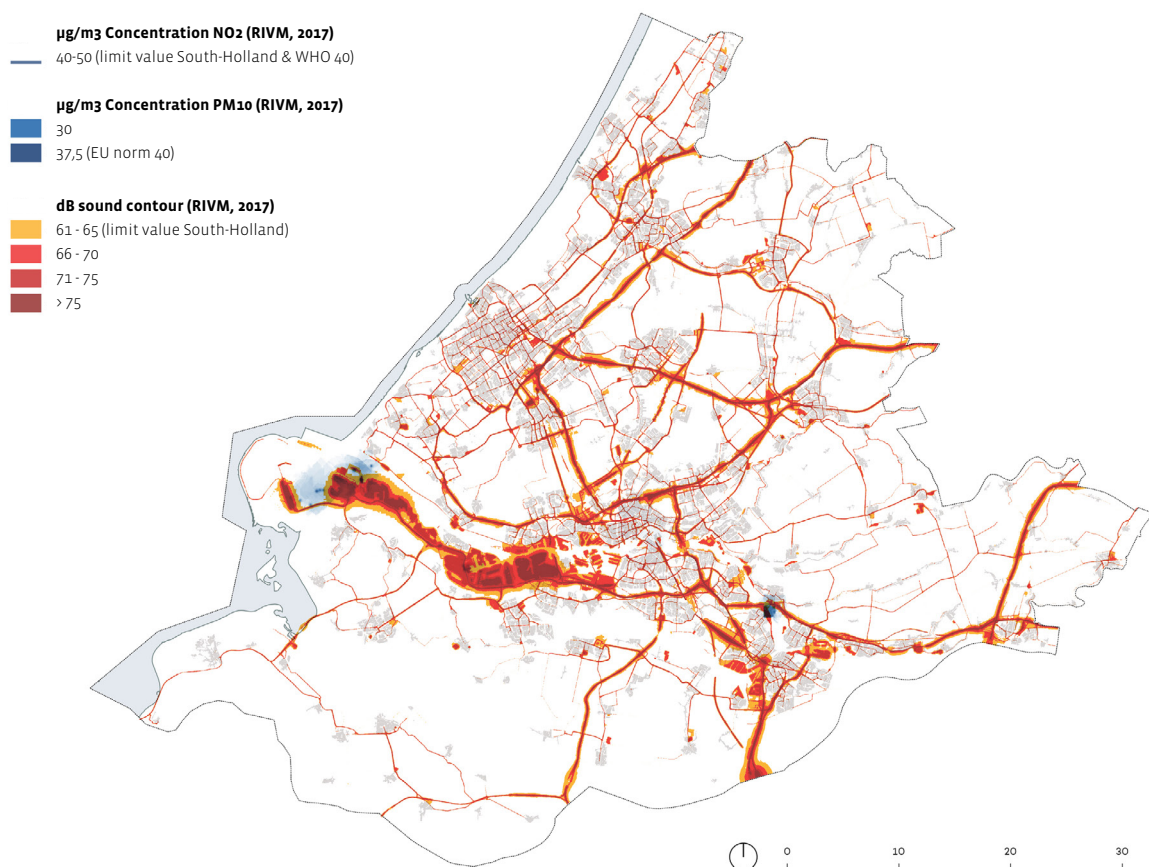


Figure 7. South-Holland: Overlap of the regional cycling network and air pollution arteries.
© PosadMaxwan, 2017

Health: A Strategic Leverage for Urban Transformation

Most transitions cities face today, such as energy and climate transitions, can come across as very technical for the average citizen. Focusing on the health impacts of measures can help policy makers tell a more relatable story. Defined more as a process than as an outcome, the healthy cities narrative is a powerful communication device as it is personal and more relatable to most people than climate change or energy transition (WHO, n.d.)

The importance of effective communication in building consensus in the larger society can be understood through the example of Amsterdam. In the 1960s, Dutch cities were becoming increasingly automobile-focused. While at the start of the 20th century bikes accounted for more than 70 percent of the modal share in Amsterdam, the figure dropped below 30 percent by the end of the 1960s (Oldenziel & Albert de la Bruhèze, 2011). Entire neighbourhoods in Amsterdam were demolished to create wide highways for automobiles. As a consequence of this automobile focus, traffic related deaths reached a peak of 3,300 in 1971, of which 400 were children.

There were a lot of action groups that fought against this terrifying situation. One of the most successful groups – called Stop Child Murder (*Stop de Kindermoord*) – was quite successful in lobbying against this automobile focus and shifting the attention to cycling and walking infrastructure (Figure 8). Similarly, the success of the North American organisation, Mothers against Drunk Driving (MADD), in lobbying for stringent impaired driving policy is known worldwide.

The key takeaway from these examples is the importance of framing the narrative from the desired effect rather than from the measure itself. While it was



Figure 8. Cyclist demonstration in Amsterdam against 'car terror'. © Rob Bogaerts, 1982

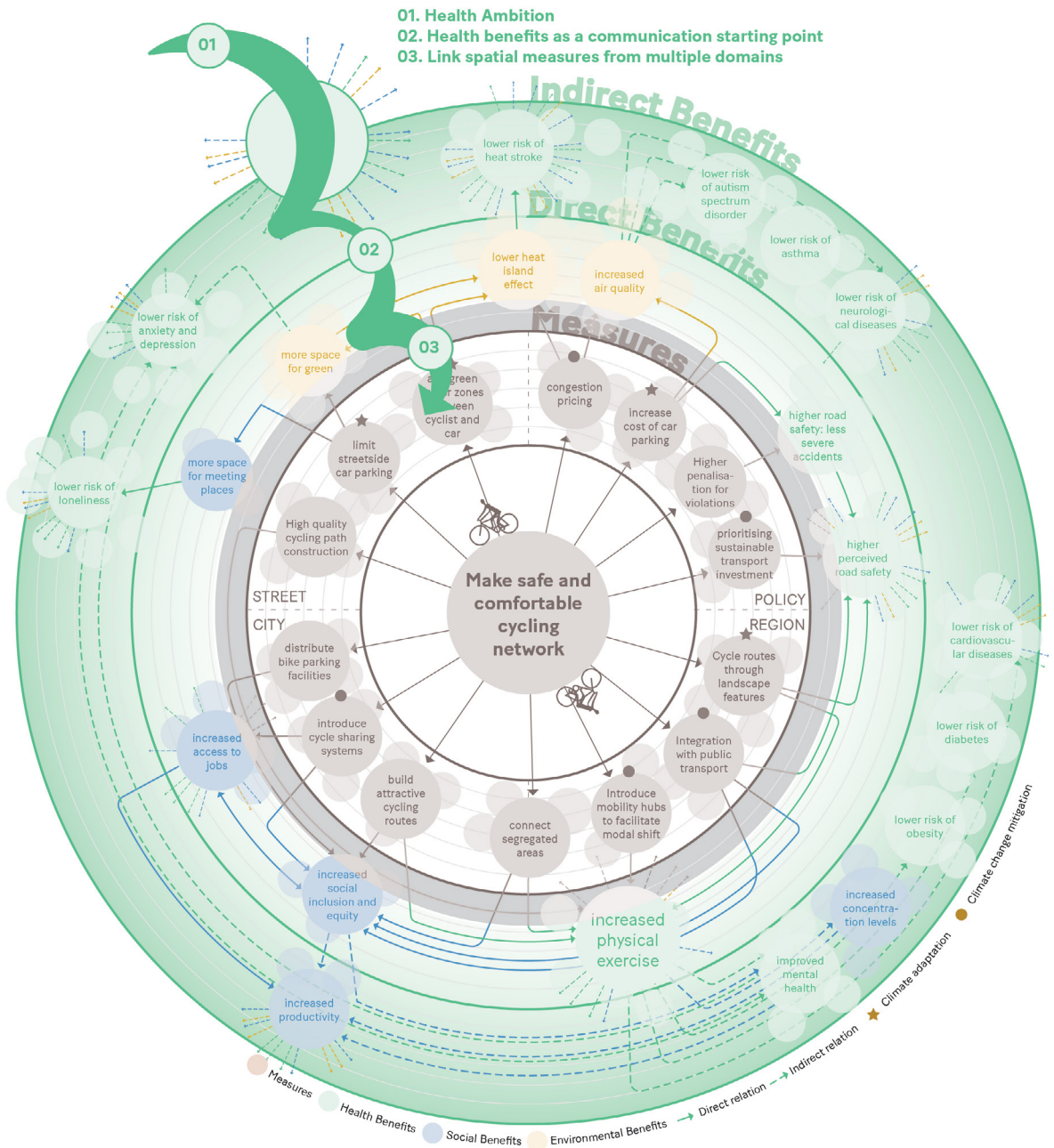


Figure 9. Healthy Cities Impact Wheel: Situating health as a strategic communication tool within the impact wheel. © PosadMaxwan, 2022

obvious the automobile focus was leading to more traffic casualties, framing it as child murder was an effective communication strategy to shock stakeholders and rally action. Similarly, the transitions that cities focus on today make technical sense and contribute to the larger public welfare, however, convincing people on technical grounds alone is a difficult task. This paper suggests that focusing on the larger health benefits for people as a strategic message can be effective in building consensus between stakeholders and the larger public. It is difficult to convince people to reduce their car use. It is a very different story, however, when trying to sell them on lowering child asthma rates. Still, the outcome might look very similar. The impact wheel can help to define the health ambition that a more strategic narrative can be based on, as given in Figure 9. Although framing interventions in cities' spaces from a health perspective can help to tell a relatable story and have people join in, the question still remains: where to start?

Follow the Energy: What Projects Can Be Built Upon?

In the public policy space, data-oriented decision making is becoming more and more commonplace as a means to prioritise choices and justify decisions to an increasingly polarised public. A positive example of this trend are children priority zones in Bogotá, Colombia, where a range of strategic interventions was proposed, each linked to the specificity of a place and informed by data analysis (Figure 10).

Data-oriented decision-making relies heavily on simulated models of reality where proposals are simulated to predict potential impacts and thus their value. Urban health is likewise influenced by this trend. What is often seen, in an attempt to understand health impacts, is that people try to compare the impact of different spatial health measures through models (Vich et al., 2019; Carnevale et al., 2018; Pisoni et al., 2022; Krieger et al., 2003). While models can be useful tools to understand the relationship between various parameters in a research environment, over-reliance on them in policy making can be detrimental as there is no single model that reflects reality accurately. The complexity of reality means that models can only be useful in very specific contexts.

Several problems can be identified in the use of simulation models to prioritise (health) investments. Firstly, it is problematic to treat health interventions and health impact as cause and effect. As models are used, deductions are attempted from them: how much healthier does one get if one implements measure X instead of measure Y? But, as human health is influenced both directly and indirectly by a complex variety of factors and some health implications take much longer to surface (Flanders Cushing & Miller, 2019; Krieger et al., 2003), it is difficult to directly link environmental design interventions to quantified health impacts through statistic models. In most cases, health measures cannot be seen as a causality – most often there is only a correlation between the environment and health. For example, there is increasing evidence of the link between air pollution and psychological defects such as dementia and autism (Peters et al., 2019; Lin et al., 2021), however there is no clear linear cause and effect, it is almost impossible to quantify the third order effects of different measures.

Secondly, although statistical models may seem objective, they raise difficult questions: what does one measure? How does one weigh the different indicators? What are the trade-offs? These are political decisions that cannot be answered objectively. Leaning too much on health impact assessment might lead to the false impression that health impacts can be precisely measured or predicted (Krieger et al., 2003).



Figure 10. Children priority zones in Bogotá. © Casa de la Infancia, 2020

Thirdly, using health simulating models to take policy decisions assumes that health impact is the only factor that matters, while health impact is only one of multiple factors affecting implementation policies (Krieger et al., 2003). This means that even if one does manage to develop a model that properly reflects the impact of different urban transformations on health, this does not necessarily mean one will be able to implement the best performing measure – thereby disregarding the model that took so much effort to be developed in the first place.

This brings the research to conclude that data and models are currently unsuitable to help policy makers prioritise where to invest to promote urban health. But how to prioritise, if not based on numbers and models? This paper advocates (for urban planners and designers) prioritisation of health measures through connecting people and acting on momentum, through a strategic turn in policy choice. Looking at what different stakeholders in a context are willing to contribute to health individually or as organisations, and understanding existing momentum and active stakeholders, can bring long-term change (Figure 11).

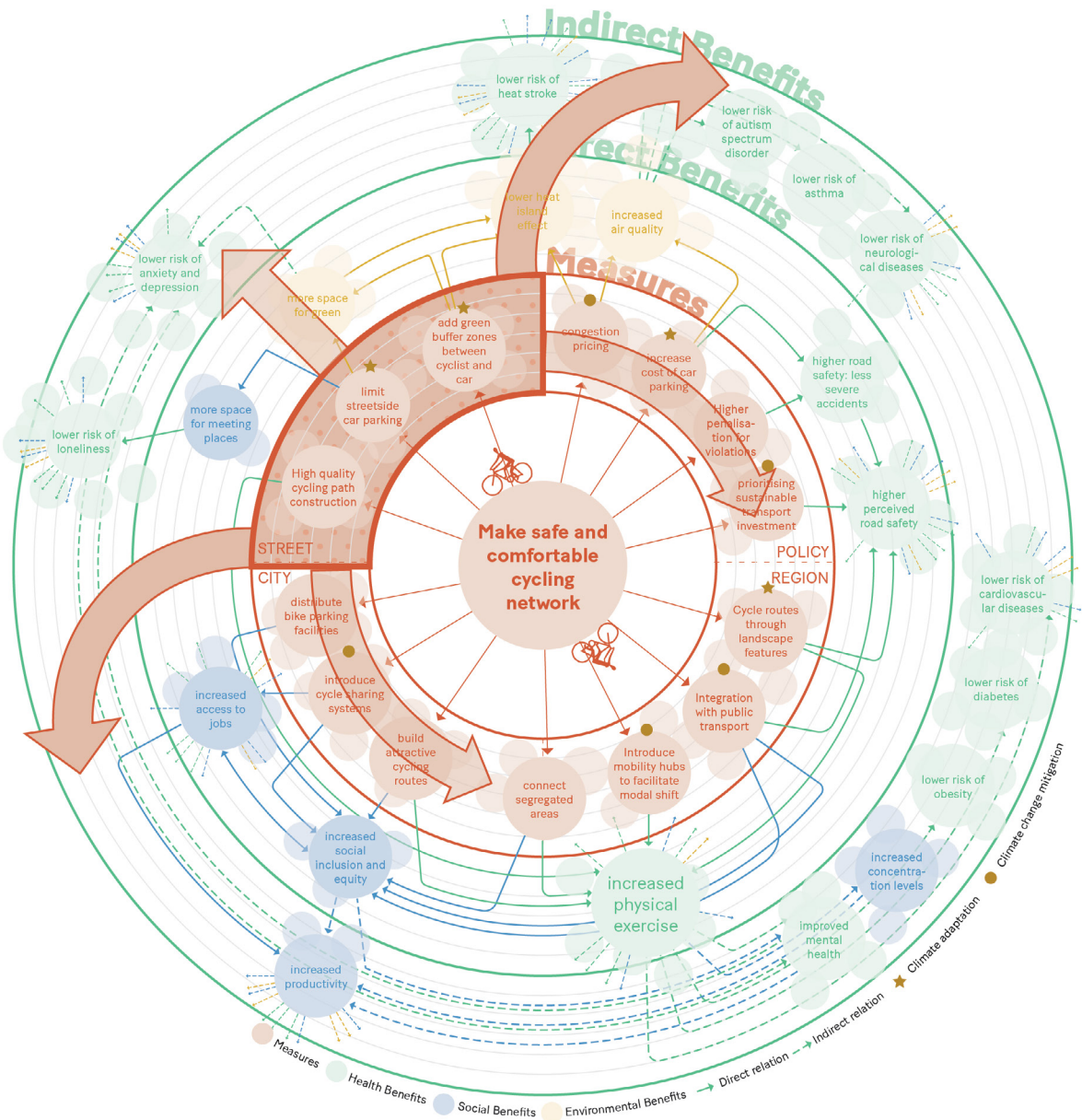


Figure 11. Healthy Cities Impact Wheel: Building on areas with existing momentum to expand along the impact wheel. © PosadMaxwan, 2022

Conclusion

The research identified three main problems towards building healthy cities. Firstly, health is seen as another positive transition that will require additional space, resources, investment next to all the other transitions such as climate, mobility, and energy and as such there is not enough capacity within city governments to work on it. This paper argues that health should always be seen as a different perspective to approach ongoing transition efforts in other domains. It is never a standalone aspect. To reap the full potential co-benefits, it is crucial to understand the correlations between health and the built environment and design or plan for a positive health impact.

Secondly, achieving positive health impact requires cross-sectoral collaboration since health is interlinked with other conventional city services. Most city governments do not have the organisational setup to facilitate cross-sectoral collaborations. Looking at health as a narrative tool can help build consensus across stakeholders with much more ease, as doing so brings a personal and relatable angle to issues. Using health as a strategic narrative can help achieve other transitions but with more stakeholders buy-in and the potential to pool resources across domains.

Thirdly, as with most policy measures, there is a need to quantify health impact of measures to help prioritise a starting point and justify any investment at all. In the case of urban health, this paper argues that this quantification is almost impossible and can take away time and effort from generating actual impact. The authors argue for a more strategic approach where the focus is on identifying easy wins towards nurturing a momentum. Develop the measures that support that momentum and that can develop into a flywheel effect over time. Follow the energy rather than searching for the one right starting point.

Understanding these potential roadblocks and their solutions can help city makers turn health ambitions into concrete actions. No matter if they are starting from a mobility perspective or climate ambitions, using health as the strategic narrative will help to bring different goals and perspectives together. The approach is also very compatible with a place-based approach to loop in local stakeholders and with the idea of the smart society. Using health as a strategic narrative provides a societal purpose to the use of technology. It gives direction to the selection of technologies to be used and how to use them, so they actively contribute to the purpose of improving population health.

References

- Barton, H., Mitcham, C., & Tsourou, C. (Eds.) (2003). *Healthy urban planning in practice: experience of European cities*. Copenhagen: WHO Regional Office for Europe.
- Barton, J. & Pretty, J. (2010). What is the best dose of nature and green exercise for improving mental health: A multi-study analysis. *Environmental Science and Technology*, 44(10), 3947–3955.
- Brusseau, M.L., Ramirez-Andreotta, M., Pepper, I.L., & Maximillian, J. (2019). Environmental Impacts on Human Health and Well-Being. In M.L. Brusseau, I.L. Pepper, & C.P. Gerba (Eds.), *Environmental and Pollution Science* (pp. 477–499). Cambridge: Academic Press.
- Carnevale, C., de Angelis, E., Finzi, G., Turrini, E., & Volta, M. (2018). Evaluating economic and health impacts of active mobility through an integrated assessment model. *IFAC-PapersOnLine*, 51(5), 49–54.
- CEI (Council for the Environment and Infrastructure). (2018). *The Healthy City: Delivering Health Through Environmental and Planning Policy*. The Hague: CEI.
- Flanders Cushing, D. & Miller, E. (2019). *Creating Great Places: Evidence-Based Urban Design for Health and Well-being*. New York: Routledge.
- Fróes, I. & Lasthein, M.K. (2020). Co-creating sustainable urban metabolism towards healthier cities. *Urban Transformations*, 2, 5(2020).
- Grant, M. (2019). Planning for Healthy Cities. In M. Nieuwenhuijsen & H. Khreis (Eds.), *Integrating Human Health into Urban and Transport Planning: A Framework* (pp. 221–250). Cham: Springer.
- Krieger, N., Northridge, M., Gruskin, S., Quinn, M., Kriebel, D., Davet Smith, G., Basset, M., Rehkopf, D.H., & Miller, C. (2003). Assessing health impact assessment: multidisciplinary and international perspectives. *Journal of Epidemiology and Community Health*, 57(9), 659–662.
- Leyden, K.M. (2003). Social Capital and the Built Environment: The Importance of Walkable Neighborhoods. *American Journal of Public Health*, 93(9), 1546–1551.
- Lin, C.K., Chang, Y.T., Lee, F.S., Chen, S.T., & Christiani, D. (2021). Association between exposure to ambient particulate matters and risks of autism spectrum disorder in children: a systematic review and exposure-response meta-analysis. *Environmental Research Letters*, 16(6), 063003.
- Oldenziel, R. & Albert de la Bruhèze, A. (2011). Contested Spaces. *Transfers*, 1(2), 29–49.
- Peters, R., Ee, N., Peters, J., Booth, A., Mudway, I. & Anstey, K.J. (2019). Air Pollution and Dementia: A Systematic Review. *Journal of Alzheimer's disease*, 70(1), 145–163.
- Pisoni, E., Christidis, P., & Navajas Cawood, E. (2022). Active mobility versus motorized transport? User choices and benefits for the society. *Science of The Total Environment*, 806, 150627.
- PosadMaxwan. (2021). *A healthy city beyond cycling: A practical guide to building healthier cities*. The Hague: PosadMaxwan. <https://posadmaxwan.nl/en/news/80/a-practical-guide-to-healthy-cities>. Accessed on February 27, 2022.
- Portney, K.E. & Sansom, G.T. (2017). Sustainable cities and healthy cities: Are they the same? *Urban Planning*, 2(3), 45–55.
- Prüss-Ustün, A., Wolf, J., Corvalan, C., Bos, R., & Neira, M. (2016). *Preventing disease through healthy environments: A global assessment of the burden of disease from environmental risks*. Geneva: World Health Organization.
- Smargiassi, A., Goldberg, M.S., Plante, C., Fournier, M., Baudouin, Y., & Kosatsky, T. (2009). Variation of daily warm season mortality as a function of micro-urban heat islands. *Journal of Epidemiology and Community Health*, 63(8), 659–664.
- Vich, G., Marquet, O., & Miralles-Guasch, C. (2019). Green streetscape and walking: Exploring active mobility patterns in dense and compact cities. *Journal of Transport & Health*, 12, 50–59.
- WHO (World Health Organization). (n.d.) *What is a healthy city?* <https://www.euro.who.int/en/health-topics/environment-and-health/urban-health/who-european-healthy-cities-network/what-is-a-healthy-city>. Accessed on March 15, 2022.
- Zheng, S., Pozzer, A., Cao, C.X., & Lelieveld, J. (2015). Long-term (2001–2012) concentrations of fine particulate matter (PM_{2.5}) and the impact on human health in Beijing, China. *Atmospheric Chemistry and Physics*, 15(10), 5715–5725.