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Report
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Summary

This report on the International Urban Health Summit/IUHS 2025 is intended to provide a brief overview that outlines the scope of the event, recurring themes and potential next steps. Its goal is to inform and, hopefully, engage with those who were not present at IUHS in global efforts to raise attention to the important role cities play in achieving global health goals and engage them in the evidence-based actions to improve health in their own cities and cities worldwide.

More than 4.4 billion people globally live in urban areas today and cities are predicted to account for 70% of the world's population by 2050. This poses social and environmental challenges that will have disproportionate impacts on the health and wellbeing of citizens, especially of socially and economically disadvantaged communities. Although cities have dominant effects on global resource use (60% of global energy consumption and GHG emissions) waste production (70%) and air pollution, they are also the centres for economic development, culture, and global communication. The varied and complex nature of urban life can complicate the development and introduction of plans and policies to promote urban health in a holistic manner.

The IUHS brought together over 200 participants from 30 countries representing international researchers from a wide range of disciplines, practitioners, policy makers and civil society to explore key challenges and solutions for improving urban health, within the broad context of the SDGs and against a turbulent background of geopolitical challenges. Leadership of the World Health Organization and UNHabitat, the two UN agencies most involved in urbanization and health expressed their strong support for the work of the Summit. Topic-specific plenary sessions and interdisciplinary breakout sessions covered: urban planning and governance; built environment and urban health; natural environment, climate change and urban health; public engagement and urban decision-making; AI and urban health; and education and urban health.

Contributors discussed many aspects of cities as complex systems, facing many challenges. But also offering many opportunities. Most importantly, cities offer the prospect of a more effective level of governance to promote health than national governments can achieve because they are closer to their constituency, better understand their needs and can be more easily held accountable for their actions. It was agreed that the IUHS had fulfilled the promises expressed at its inception, for intergenerational engagement; bringing together long-time experts in urban health with individuals seeking their first exposure at the conference; engaging scholars, practitioners and policy makers from the full array of disciplinary backgrounds needed to advance urban health; and creating a transdisciplinary learning platform for sharing ideas and experiences globally.

Four common themes to drive progress on urban health emerged throughout IUHS:

(i) *The importance of governance*, based on the understanding that government cannot act alone, but requires identifying, informing and engaging stakeholders and affected communities in the planning, implementation and evaluation of actions appropriate to the problem being addressed. Good governance involves political support for progressing health-in-all policies, commitment to health equity, and strong long-term partnerships.

(ii) *That health is produced beyond the health sector* and promoting urban health requires new ways of working in policymaking, practice, research, and education. Structures and processes must be created and rewarded that promote transdisciplinary scholarship and practice; interagency working within government that promotes a health-in-all approach to decision making in the health and health influencing sectors; and intersectoral (government, civil society, business) ways of working.

(iii) *Engagement of affected communities* is critical for success in identifying problems, creating sustainable solutions and evaluating the effectiveness of programmes and policies to improve urban health.

(iv) *The importance of "place"* in achieving urban health goals. Taking advantage of the value of proximity and density in urban planning; understanding and honouring local culture and heritage; using local knowledge, especially in tackling the challenges of informal settlements; and bringing nature into cities for positive mental and physical health impacts.

Achieving these priorities also depends on filling some critical gaps identified by Summit participants:

i. *Gaps in data*: the lack of robust data and data systems at city and district level globally, but especially in LMICs, to both inform action and permit the use of AI and future digital technologies and forecasting expertise to collect and mobilize evidence that will advance health more effectively.

ii. *Gaps in implementation*: we increasingly know what to do but action is not taken for complex reasons including lack of capacity or technical knowledge, failure to implement approved legislation and regulations, and lack of political will.

iii. G*aps in communication*: overcoming the barrage of bad information and disinformation, magnified by the ubiquitous presence of social media; while addressing the need to improve and align public information and messaging on health across global, national and city/local government levels; and improving communication between policy makers, practitioners, academics, business and the public to enhance problem identification and development of solutions.

The leadership and members of National academies of science, medicine and engineering and their global network, The InterAcademy Partnership (IAP), were important participants in the IUHS. There are 150 National Academies worldwide within IAP that can play a critical role in advancing urban health as they incorporate

the disciplinary strengths needed for a systems-based approach to translating evidence into practical action. National academies are often requested by their respective governments to provide them with advice on health and science policy, giving them a direct line to policy makers. Academies in partnership can convene experts in their countries and regions to leverage outputs from related research and innovation initiatives and develop recommendations for action that can be responsive to both regional-scale and local contexts. The IAP advised by its Urban Health Working Group is developing a regional-to-global project initiative, to increase the engagement of national academies and their regional networks in urban health. Meetings of this group during the Summit began to define the potential scope and priorities for this initiative.

The Union of the German Academies of Sciences and Humanities, the InterAcademy Partnership in partnership with International Society for Urban Health and key intergovernmental bodies, are committed to taking forward the outputs from the IUHS and welcome you to join us in this effort.

Report

International Urban Health Summit (IUHS)

Herrenhausen Palace, Germany 9-11 April 2025

Co-organised by Berlin-Brandenburg Academy of Sciences and Humanities (BBAW), InterAcademy Partnership (IAP), International Society for Urban Health (ISUH), and Volkswagen Foundation

More than 4.4 billion people globally live in urban areas and the urban population is predicted to reach 6.7 billion by 2050, accounting for 70% of the world's population. This poses social and environmental challenges that will have disproportionate impacts on the health and wellbeing of citizens, especially of socially and economically disadvantaged communities. The varied and complex nature of urban life can complicate the development and introduction of plans and policies to promote urban health in a holistic manner. The IUHS comprised six topic-specific plenary sessions and multiple interdisciplinary Breakout sessions of diverse format, which discussed future-oriented questions at the centre of interest for a holistic view of urban health. The Plenary sessions covered:

- Urban planning and governance
- Built environment and urban health
- Natural environment, climate change and urban health
- Public engagement and urban decision making
- AI and urban health
- Education and urban health

The IUHS brought together international researchers from a wide range of scientists from various disciplines, practitioners, policy makers and civil society to explore key challenges and solutions for improving urban health, within the broad context of the SDGs and against a turbulent background of geopolitical troubles.

The opening sessions combined welcomes from the co-organisers with scene setting for subsequent detailed discussions. Georg Schuette (Volkswagen Foundation, Germany) observed that the ambitious necessity of taking a holistic, transdisciplinary, cross-sectoral approach to tackle multiple challenges would be evident throughout the Summit. The sessions will draw on different expertise from more than 30 countries, 90 speakers and 200 participants. Video messages from Tedros Adhanom Ghebreyesus (DG, WHO, Switzerland) and Anaclaudia Rossbach (Executive Director, UN-Habitat, Kenya) delineated some of the profound challenges, including inequity, climate change, conflict and pollution, and the opportunities of urbanization to nurture health, sustainability and economies. The continuing UN commitment to working with partners is at the core of promoting integration of health into urban policies and avoiding disproportionate adverse impacts on the most vulnerable. Peggy Hamburg (Co-President, IAP, USA) introduced IAP, the global network of 150 academies of science, engineering and medicine, as a key partner in working across disciplines,

involving early career professionals and sharing ideas to take forward outputs from the Summit. Partnership to advance urban health is enhanced by the continuing leadership of ISUH whose Board Chair, Jeffrey L Sturchio (USA) reinforced the importance of addressing the upstream social determinants of health and health inequities as part of urban planning, design and governance objectives for shaping the collective vision. In completing the introductory welcomes from co-organisers, Christoph Markschies (President, BBAW, Germany) observed that a pervasive, ambivalent feeling about cities can be traced back into antiquity. Today, many still feel like strangers in their urban environment and, while modernity depends on an accelerating pace of life and complexity, this is often deemed hostile to health. Detlev Ganten (BBAW, Leopoldina, and Virchow Foundation) in his role as a creator of the IUHS, thanked all the co-organisers and described how the innovative format of the Summit was designed to encourage and sustain interaction.

Additional welcoming remarks were contributed by political leaders. Belit Onay (Mayor, City of Hanover, Germany) described the importance of organizing the International World Exhibition in the year 2000 and in this context the steps taken in Hanover to become climate neutral, working with multiple stakeholders on solutions for climate resilience and he mentioned how global political developments exacerbate the difficulties of taking climate action. Ellen Hausdorfer (State Secretary for Health & Care, City of Berlin, Germany) emphasised that "*this Summit is at the right time and right place*" and anticipated new insights for targeting health protection and promotion for all population groups. Many of the necessary actions lie outside of the health sector itself but all require a robust evidence base.

In her contribution to setting the scene for cities as drivers of global health, Jo Ivey Boufford (New York University, IAP and ISUH, USA) elaborated the intersecting impacts on health from simultaneous global challenges of urbanization (growth accelerating in LMICs), epidemiologic (the emergence of non-communicable diseases as the major cause of preventable mortality) and demographic shifts (increased longevity coupled with a youth bulge, especially in LMICs), and climate change. While cities have dominant effects on global resource use, waste production and air pollution, they are also the centres for economic development, culture, and global communication. A governance approach that progresses "health-in-all-policies" in housing, transportation, education, urban planning, community cohesion, and health service provision and avoids health disparities, "*your zip code is a better predictor of your health than your genetic code*", requires transformation from a medical to cross-sectoral model for preventive health strategies. While the SDGs provide context for a new urban agenda, involving multiple UN bodies and agencies, self-organising global networks (e.g. city mayors) and public-private partnerships, truly joined-up policy requires more. For example, "urban" is not mentioned in SDG3 (good health and well-being) and "health" is not mentioned in SDG11 (sustainable cities and communities). Therefore, the Summit can play a pivotal role for multiple priorities: developing ideas for urban policy that addresses the social determinants of health; promoting inter-agency and inter-sectoral governance and decentralisation strategies; encouraging

private sector and civil society engagement; and applying the health criterion to infrastructure investment and place-based strategies.

Peter McGrath (IAP, Italy) explained further, how IAP is contributing to the continuing development of ideas. An Urban Health Working Group (UHWG) was launched in 2018 and IAP outputs in 2022 included an inventory of academy activity in urban health and a Statement on implications of urbanization in LMICs.The UHWG progressed further in 2023, and will serve as advisors on the development of a new IAP regional-to-global project on urban health that was explored during the course of the Summit to help define potential scope and criteria for selecting priorities. In concluding the "setting the scene" presentations, Ole Petter Ottersen (Lancet Commission for Global Governance for Health, Norway) cautioned about the unfortunate current convergence of geopolitical tensions resulting in health solutions driven by ideology. Compensating for these influences at a time of increasing uncertainty is facilitated by the focus on urban health insofar as cities are much closer to the multiple factors that impact health and inequity than are other governance levels. Cities are already the locus for cross-sectoral innovation and can capitalise on the power of civil society.

Plenary session 1: Urban planning and governance

In his introduction, the Chair Rainer Fehr (Medical Faculty University of Bielefeld, Germany) advised that knowledge generation alone is not enough to advance health in cities when barriers are created by competing, vested interests. The role of urban governance is central for "*making things happen" and* has several dimensions: goals and values; actors and stakeholders; strategies (such as health-in-all-policies and addressing health inequities); and resources. Marcus Grant (Editor-in-Chief of Cities & Health, London, UK) reviewed the dual objectives to fill governance gaps: firstly, understanding what to do to improve health in a particular city or neighbourhood (evidence-led); and secondly, how to do it (e.g. work of WHO in integrating health in urban and territorial planning). He described how diverse sources can fill both gaps and how his journal, Cities & Health, is committed to providing evidence for action and, through its related City Know-how briefings (www.cityknow-how.com), sharing case studies of implementation, both effective and ineffective. Heike Koeckler (Bochum University of Applied Sciences, Germany) indicated that achieving equity goals for governance depends on empowerment of critical stakeholders: co-creation using participatory approaches, taking into account all population groups in the community. She sees this approach as both key to successful interventions and to addressing a persisting gap in implementation. Carlos Moreno (Paris-Sorbonne University, France) introduced his concept of the 15-minute city for local self-sufficiency and a healthier future by describing projects in neighbourhoods in Paris aimed to change the city lifestyle/business model according to the principle of increasing proximity to essential services and encompassing efficient public transport, low carbon-dependent active mobility, quality public spaces and mixed-use buildings. This conceptual framework, and other examples embodying the desire for more compact cities, stimulated discussion throughout the Summit. For example, are such approaches scalable for the global

South? Can everybody benefit from proximity or might inequity worsen? Would increasing urban density exacerbate infectious disease transmission? Samuel Gachohi Njuguna (UN-Habitat, Nairobi, Kenya) discussed the efforts of UN-Habitat (https://unhabitat.org) to support cities in development and use of multilevel legal frameworks that support health in all governance and health equity. For example, to encourage land use policies that support healthy housing, public spaces, healthy food consumption and address other social determinants of health, elaborated in UNHabitat's Directory of resources for planning healthy environments. Wu Zhiqiang (Chinese Academy of Engineering, Beijing, China) highlighted the experience of China in advancing its national urban plan. Every year more than 20 million Chinese move from the countryside to cities, sharing the challenges for housing, health, education and other services; these challenges are compounded by an ageing population and a lower birth rate. Recent research on spatial associations (Chengdu Health Space Mapping Life Expectancy) showed that residents a certain distance from the city centre tend to live longer, interpreted in terms of the variability in environmental conditions, though the effect of their relatively lower accessibility to health services needs to be better understood. In China, city governance is concentrated at the housing block level, closely involving the neighbourhood community that is most familiar with local issues.

Speakers agreed with the Chair's proposition that a deeper understanding of good governance is essential for urban health. The concept of effective governance was also raised in the context of addressing socioeconomic disparities. Examples for good governance come from many sources with a consensus on the importance of learning from past mistakes, involving multiple stakeholders, and ensuring that plans are sustainable (e.g. if political background changes with successive mayors). Further understanding and sharing of local governance models closer to the neighbourhood level can add value to discussions and guidance on multilevel governance work, which has prioritized aligning city, national and regional level governance. Finally, the importance of developing indicators for, and evaluation of, governance practices testifies to the potential added value of closer partnerships with universities to share expertise. Case studies that foster and embed a culture of evaluation will facilitate the development of evidence to inform the choice of "what to do" and "how best to do it" and improving governance to get things done.

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Plenary 2: Built environment and urban health

The built environment includes the infrastructures for housing, transportation, energy, water, sanitation and digital networking that are critical for safe and effective urban growth. To what extent then do advances in technology, engineering and architecture offer opportunities to achieve urban health objectives? In opening the session, the Chair Giselle Sebag (ISUH, USA) acknowledged the collective responsibility to reimagine cities for health, equity and resilience. Gil Penalosa (8-80 Cities, Toronto, Canada) judged that we have not done well so far in terms of mental, physical or social

health or sustainability and, agreeing with other speakers, urges promoting urban density, alongside greater social interaction, with growth preferably contained within the existing urban footprint. Mazda Adli (Interdisciplinary Forum on Neurourbanism, Berlin, Germany) reviewed the association between urban environment (both the time spent in cities and size of cities) and mental health. Social stress arises from both social density and social isolation and this mix may be toxic for citizens who cannot master their own environment. MRI studies identify stress-processing brain areas, e.g. the amygdala is more active in urban settings: stress-regulating brain activity is moderated by social and biological factors such as green space and air pollution. This is a rapidly-advancing scientific area: a citizen science project is underway to characterise when, where, and for whom the environment poses neurourbanism risks. Jaime Montoya (National Academy of Science and Technology, Philippines) considered urban resilience in terms of infectious disease risk. Although cities facilitate access to diagnostic and therapeutic health services, they may also increase transmission of pathogens (e.g. COVID-19) and experience greater climate change impacts. He expressed concern that the future advantages of digital infrastructure development may not be available in LMICs and generate yet another significant divide. The threats are compounded for cities lacking data on vulnerable groups and it was suggested that national academies can play an important role in advising decision-makers in this important area. Anne Bach Nielsen (University of Copenhagen, Denmark) extended discussion of climate change impacts, including extreme weather event disasters. Solutions (e.g. blue and green infrastructure) may already be available but who defines the problem and is responsible for implementing multifunctional solutions? Least understood is the personal domain in solutions – cultural beliefs and values for designing and using space, and susceptibility to gender bias. Locana Gunaratna (Institute of Architects, National Academy of Sciences, Sri Lanka) discussed evidence from South Asian megacities (constituting 5 out of the current global total of 23), historically driven by rural migration but now often experiencing urban growth unaccompanied by economic growth. The previous IAP work (footnote i) provides detail; a particular challenge is the expansion of informal settlements, lacking health services and subject to increasing risks of fire, flood, and infectious disease. Solutions are complex but must ensure that hitherto neglected community voices are heard and that local government officials take ownership and increase control over local development, especially for projects proposed by international donors. Nathalie Laure Roebbel (WHO, Switzerland) agreed with previous speakers on the merits of a systems-based approach and community involvement in solutions, also agreeing that action in one sector can benefit other sectors. Action on air pollution exemplifies many of the issues (https://www.who.int/healthtopics/air-pollution) and cities can play a major role for themselves while also supporting national change. There are numerous evidence-based energy efficiency case studies for the housing and transport sectors and WHO emphasises the notion of co-benefit for urban interventions. For example, increasing active transport (walking/cycling) decreases air pollution, increases physical well-being, social connectivity and mental health. Increasing thermal insulation of housing reduces heat- and cold-induced health

problems and air pollution and decreases household expenditure. Key points for advancing urban health through the built environment relate to breaking down silos across sectors and disciplines and changing the paradigm so that the healthy choice is the easy choice and not seen as a “sacrifice”.

Plenary 3: Natural environment, climate change and urban health

Cities account for the majority of global energy consumption (more than 60%), GHG emissions (70%) and waste (70%). In turn, climate change vulnerabilities are exacerbated in cities, e.g. because of heat island effects, sea level rise and pollution. Modelling to project future scenarios, e.g. for extreme events, is vitally important. For example, Gabriel David (Technical University Braunschweig, Germany) cautioned that, as no significant sea level rise had yet been experienced, it can be difficult to imagine future, devastating impacts on coastal cities. However, these will come and modelling can help cities to prepare. Bruno Marques (International Federation of Landscape Architects, New Zealand) explained that the role of landscape architecture is not just as infrastructure but also as a critical setting for social connections and cultural practices essential to health and well-being. Therefore, the starting point for protection of the landscape must be understanding of individual values including Indigenous People’s, incorporating their knowledge and values into planning. Georg Seifert (Charité University Hospital, Berlin, Germany) referred to previous discussions on the planetary health framework to make the case that the integration of immersive nature experience into urban life would profoundly advance public health: incorporating the value of nature both in treatment and prevention of ill health. In related discussion of environment-mental health issues, Rana Abdelkader (Technical University, Dresden, Germany) described a study on university campus healthscapes in Dresden and Cairo as an experimental setting for a city in microcosm: this conceptual framework potentially serving to facilitate transition between different scales, building-neighbourhood-city. This project has also emphasized the importance of transdisciplinary learning and the importance of understanding of why people use the current space as they do to inform changes. The session Chair, Ourania Kosti (IAP, USA) stimulated further discussion of emerging points by asking “*what are cities getting wrong?”* perhaps by their insufficient inclusivity and flexibility in adopting solutions. Action is often catch-up, e.g. adding green space to an existing urban environment rather than initially planning the environment for health. This particular weakness may be compounded by the assumption that all green space is naturally healthy yet it known that city soil is often degraded and that green spaces may have inadvertent adverse consequences for health accruing from their introduction of vector-borne diseases and allergens. Cities are also well-placed to do more in countering miss- and dis-information by opening up productive communication with climate change sceptics and others (e.g. through citizen fora).

Plenary 4: Public engagement and urban decision-making

Community leaders, advocates and organisations are increasingly seen as critical partners in efforts to engage populations in urban decision-making. Innovative evidence-based methods are available to maximise meaningful community engagement in developing actionable information. In the session chaired by Blessing Mberu (African Population and Health Research, Kenya), Christopher Bailey (Arts and Health, WHO, Switzerland) explored the evidence base for health benefits of the arts (https://www.who.int/arts-and-health), these depending not just on bringing producers and users together but on sharing the experience for stress reduction. Sustained impact can be enhanced if starting by asking the community, "*What are your health needs*?" Waleska Teixeira Caiaffa (Federal University of Minas Gerais, Brazil) described an Observatory for urban health in Belo Horizonte, as a local nexus of knowledge, action and equity. With a mission to train local researchers and build the capacity of local government agencies to develop and analyse the data needed to build healthier cities, this Observatory has worked for decades across international-regional-national-municipal levels, building in social context in a partnership for health and other sectoral interventions. It was realised that ultra-local data were needed, that is highly granular at a specific geographic scale; the capturing of local voices also then facilitates the dissemination of the co-produced knowledge. Joerg Fingerhut (Berlin School of Mind and Brain, Germany) returned to the theme of neurourbanism, describing research platforms for urban mental health and well-being. Citizen science workshops in Berlin, examining emotional well-being, created opportunities for public engagement. Recent extension of these in a citywide approach has reached out to migrant, youth and other organisations in diverse neighbourhoods and, again, underscored the place of the arts in transformative experience. Ethan Kent (PlacemakingX, New York, USA) reviewed other recent examples of evidence-based engagement models. Undertaken by a worldwide cooperative network to reimagine and reinvent public spaces for healthy and inclusive communities, it is described in detail at www.placemakingx.org. David Napier (UCL, UK) noted the importance of adopting quality standards when filling data gaps during public engagement, "*bad data leads to bad everything*". A major global initiative AI4HealthyCities is underway with the Novartis Foundation in several cities to collecting context-specific information from health care and other agencies and using AI to help determine the dominant drivers of cardiovascular health and health equity. Dr Napier's work drawing on his Vulnerability Index provides important qualitative information from the lived experience of those in vulnerable communities that can be brought to the level of robust evidence, thereby assuring the availability of missing voices in decision-making. Subsequent discussion focused on potential implications for global equity because AI tools are trained on available datasets that may be missing in LMICs and are expensive to acquire. Will it be misleading to use AI based on data from elsewhere? Mari Vaattovaara (University of Helsinki, Finland) reiterated the importance of multidisciplinarity as well as co-creation, yet many universities are still based on disciplinary silos "*the world has problems and universities have departments*." Inception of a Master's Programme on urban studies and planning, a partnership between the universities of Helsinki and Aalto and supported at the local political level,

exemplifies a transdisciplinary solution and more generally clarifies obstacles to innovative teaching and multiple faculty involvement. In general discussion, the question was asked – does public engagement depend on science literacy and public understanding of science? The speakers agreed that science must be publicly explained but in a way, that acknowledges people as experts in their own lives. Self-agency and trust are critical domains that have to take account of emotional reality as well as factual reality.

Plenary 5: AI and urban health

The rise of AI has enhanced abilities to analyse large amounts of information. As noted previously, partnerships across academia, private sector, government and civil society offer unprecedented potential for using AI to understand aspects of urban health and its intersection with urban planning and climate change. The Chair Aljoscha Burchardt (German Research Center for AI, Berlin, Germany) introduced the session by observing that AI as a tool can now be used to address problem areas between multiple disciplines and across boundaries. In addition, as Betty Chemier (UNDP Panama Accelerator Lab) described, Generative AI is acquiring new roles to improve citizen participation and understand the factors that influence social cohesion. AI has further promise for intergenerational collaboration and to inform scenario planning and promote high functioning local governance. Novel applications of AI prompted discussion on how to measure the success of efforts in better engagement. Ahmed Hassoon (John Hopkins Bloomberg School of Public Health, USA) presented a validation study of another disparate use of AI as a tool: automated characterisation of neighbourhoods in cities (e.g. Baltimore) by street level imaging. A next step here is to correlate mapping data with health outcomes in order to inform urban policymaking. The community will become involved in studies to correlate data collected within and outside houses. Jude Kong (AI and Mathematical Modelling Lab, Toronto, Canada) added other AI applications that address urban public concerns. For example, quantifying and localising air pollution; and drawing on multiple, credible information sources to counter misleading information such as "*bike lanes cause traffic congestion*" or "*public transit systems are full of germs and criminals*". Ensuing discussion queried what happens if intelligence becomes a commodity. Who shapes it? Who owns it? What are the implications for community engagement? Kathrin Wolf (Helmholtz Munich, Germany) reviewed the potential of AI to bring together environmental exposure and health data, to fill current gaps in the integrated assessment of drivers of ill health (e.g. combined exposure to heat and air pollution) and in proposed solutions (e.g. greening). AI requires quality data and expert-driven structuring, but there are still difficulties in combining and curating different data streams and disciplines that may currently employ incommensurate formats and quality assessment procedures. Peter Speyer (Novartis Foundation, Basel, Switzerland) returned to a description of AI4HealthyCities, expected to demonstrate the potential of AI to inform and implement precision population health. Discussants queried: AI can find correlations but how to establish causation. An answer lies in

coupling quantitative data with expert input to interpret associations, plus addition of qualitative data from lived experience. In general, discussion, a previous concern was reiterated – will public health be disadvantaged in those regions less well resourced with their own data and reliant on algorithms trained using data sourced elsewhere? Because IT has been a focus of considerable investment in health care delivery systems, especially hospitals, it will be critical that application of AI in the health sector in the future includes creating IT systems that collect data from primary care providers and from health influencing agencies on the broader determinants of health if effective interventions are to be developed and implemented. There is optimism that insights can be translated from data-rich regions to data-poorer populations particularly if augmented by local insight from lived experience. Other concerns raised were the difficulty in many countries of linking data between different health services, and weaknesses in protecting data from commodification. In these regards, AI is subject to the same obstacles and biases as other data-dependent research. One way forward would be for the academic community to advocate their research needs in advancing population and individual health in cities to policy makers (the private sector already has an AI tradition of doing this).

Plenary 6: Education and urban health

The Chair Annette Grueters-Kieslich (BBAW and ALLEA, Germany) remarked that comprehensive education strategies are essential for all dimensions of urban health and, as with other themes covered in the Summit, required participatory approaches based on community engagement. Camille Mba (University of Yaounde, Cameroon) presented evidence from Cameroon, with a particular focus on education approaches to prevent obesity. These included more effective provision of contextual messages and images, e.g. in food labelling, and peer support initiatives to promote physical exercise, accompanied by task shifting for health care professionals and by encouraging a greater role for civil society organisations in advocacy and media engagement. Esther Presilla Danquah (Health Service, Kpone Katamanso Municipality, Ghana) continued with the theme of food and nutrition insecurity in women and girls. Nearly 20% of girls in LMICs globally are obese, and cities present a particular problem, where obesity may be combined with mental ill health and anaemia, compounding inequity with lack of access to healthy foods and lack of information on what is healthy. There may also be a dilemma in respecting cultural values, where e.g. some tribes in Ghana do not consume fish and other high-protein foods, and where there is a tradition of keeping girls indoors, physically inactive. Education helps to make better decisions, leads to higher incomes and empowers the individual. Community-based education for health in the multi-sectoral urban context must be better informed by gender issues, be accompanied by nutrition-sensitive policies (such as subsidies) and combine global solidarity with local action. Atiya Mosam (Mayibuye Health and University of the Witwaterstrand, South Africa) agreed that lack of information may be a critical weakness but there are also urban problems associated with navigating too much or incorrect information (particularly when promoted by vested interests) and

when facing barriers to translating information into action. In the dietary context, there are priorities for turning information into legislation to empower consumers (while recognising cultural contexts) and for creating the supportive environment where the choice of healthy food is the easy option. Keiko Nakamura (Institute of Science, Tokyo, Japan) underscored the imperative of taking a transdisciplinary approach in urban health education. Currently many practitioners have adopted transdisciplinarity in practice, learning-by-doing, encapsulating the previous evolution from disciplinary to multidisciplinary to interdisciplinary. However, the urgency in tackling priorities cannot realistically be satisfied only by on-the-job learning, and a professional educational strategy was exemplified by short, onsite/online courses introducing the transdisciplinary approach to urban health. Tania Singer (Laboratory Social Neuroscience, Max Planck Society, Berlin, Germany) closed this diverse session by describing the value of novel training for social skills in vulnerable groups (such as young women). The online approach, based on a joint mental exercise for practising the social brain, had been piloted during the COVID-19 pandemic, to decrease loneliness and improve mental health. Having demonstrated proof-of-principle, there programmes are now being replicated in health care settings and schools, where a priority is to train teachers to train children for social mindfulness. Annette Grueters-Kieslich in concluding that education has pervading value in many different contexts asked the speakers to select their priorities for delivering education, especially to the most vulnerable – what is scalable, in which settings and when? All agreed that a multilevel approach was needed. Early intervention must combine school and household settings and must extend to reforming the medical school curriculum to emphasise issues for preventive medicine and patient empowerment, for teacher training and in curricula for public health and urban planning.

The conclusion "*we have the evidence, now we need to implement on a contextual basis"* applies equally to all the other outputs of the IUHS, and depends on inspiring political will that, itself, can be driven by community engagement.

Final plenary: Wrap-up and next steps

Jo Ivey Boufford reinforced the IUHS opening statements that, globally, this is a momentous, disordered and uncertain time characterised by declining respect for science and scientific freedom. Cities are complex systems and face many challenges and offer many opportunities Cities may offer prospects for a more effective level of governance to promote health than national governments can do in the current global environment because they are closer to their constituency, better understand their needs and can be more easily held accountable for their actions. The IUHS had fulfilled the promise expressed at its inception, for intergenerational engagement, bringing together long-time experts in urban health with individuals seeking their first exposure at the conference; engaging scholars, practitioners and policy makers from the full array of disciplinary backgrounds needed to advance urban health; and creating a platform for sharing ideas and experiences globally. Four common themes could be

discerned throughout IUHS: (i) the importance of governance; (ii) that health is produced beyond the health sector and promoting urban health requires new ways of working in research, education, and practice; (iii) community engagement should be at the core of planning, implementation and evaluation; and (iv) the importance of “place” and partnership in achieving urban health goals. These themes underpin the emerging priorities (Table 1): in addition to succinctly summarising emerging outputs from the IUHS, Table 1 provides a template for future work.

Table 1. IUHS conclusions

Thematic priorities for urban health	**Actions needed**
Governance- "*what it takes to get things done"*	Understanding that government cannot act alone. Identifying and engaging critical stakeholders and affected communities in the planning, implementation and evaluation of actions appropriate to the problem being addressed. Progressing health-in-all policies and commitment to health equity. Renewing emphasis on legislative and regulatory frameworks that support implementation. Growing global collaboration and support for increasing the authority and responsibilities of local governments. Managing donor behaviour to align with local priorities. Understanding both co-benefits and unintended consequences of actions on health.
New ways of working needed in research, education, and practice to promote health	Cities are complex systems and identifying and addressing the problems and taking advantage of the opportunities requires structures and processes that promote interdisciplinary, interagency (within government) and intersectoral (government, civil society, business) ways of working: • Promote political leadership that supports interagency collaboration needed to address the problem identified. • Governance structures must be inclusive across agencies, sectors and communities. • Win-win PPPs are critical for sharing expertise and mobilizing resources—trust needs to be developed bilaterally to create effective and sustainable partnerships to promote health. • Universities need to promote and reward the breaking down of silos, interdisciplinary scholarship, and closer engagement between academics and practitioners and policy makers: "*cities have problems and universities have departments*" and changes need to be made. • Promote government and academic partnership to improve data utilization, identification of metrics for success and use of appropriate evaluation methods.
Community engagement	Recognise and act on the fact that engagement of affected communities is critical for success in

	identifying problems, crafting solutions and evaluating effectiveness of programmes and policies: • City government and city level governance are well suited to developing longer-term relationships with their communities (beyond emergency response) to foster trust and build the capacity for sustainable partnerships and, as needed, independent community action. • Academics need to recognize that community members are experts on their own lives and bring that expertise to a partnership with academic experts. • Research and educational activities with communities must move from project- or grant-specific activities to sustainable long-term partnerships to be mutually beneficial. • Increase the knowledge and use of evidence-based technologies and interventions for engaging communities e.g. importance of the arts; participatory budgeting; health impact assessments; citizen juries; placemaking. • Recognise regional and national differences may influence models of engagement and the importance of indigenous knowledge and including the voice of the historically voiceless.
The importance of place	Managing the process and pace of urbanization: • Incorporate value of proximity and density in urban planning for health. • Understand the historical heritage and culture attached to "places /neighbourhoods" in cities. • Use local knowledge rather than imposing top down or external solutions to shape public spaces and infrastructure. • Bring nature into cities in ways that support positive mental and physical health impacts. • Address challenges for retrofitting older cities as well as design of new cities "*50% of urban space for future populations has yet to be built*". • Develop strategies with affected communities to tackle informal settlements
Filling gaps	Improving availability of robust data especially for LMICs. Using AI tools to collect and mobilise evidence.

	Evaluating at all stages. Doing better in education and communication.

This latter theme of “filling gaps” can be elaborated further in terms of:

1. Data: the lack of robust data and data systems at city and district level globally, but especially in LMICs, to both inform effective action and permit the use of AI and future digital technologies and forecasting expertise to collect and mobilize evidence that will advance health more effectively.
2. Implementation: we increasingly know what to do but action is not taken for complex reasons: lack of capacity or technical knowledge; failure to implement approved legislation and regulations; lack of political will.
3. Communication: overcoming the barrage of bad information and disinformation exacerbated during the COVID epidemic and magnified by the ubiquitous presence of social media; the need to improve and align public information and messaging on health across global, national and city/local government levels; improving communication between policy makers, practitioners, academics, business and the public to enhance problem identification and development of solutions.

Ourania Kosti and Peter McGrath moderated final interaction with national academy participants from the African, Asian, American and European regions to inform the proposed new IAP regional-to-global project on urban health. National Academies are often chartered by their respective governments to provide advice on health and science policy. They have developed experience in presenting evidence and clustering topics in a way that encourages uptake by policy makers and other stakeholders to resolve interconnected problems. Academies in partnership can convene experts in their countries and regions to leverage outputs from other research and innovation initiatives and develop recommendations for action that can be responsive to both regional-scale and local contexts.

In his final synthesis, Christoph Markschies interpreted urban health challenges in terms of:

(i) questions of power – who can design spaces and resolve conflicts between land-use objectives (for the economy, environment, health and heritage), and
(ii) questions of how to share information in open discourse, while also balancing emotion-driven considerations and respecting cultural values.

Academies have a core role in incorporating all disciplinary strengths for driving and sharing practical action and international academy networks can provide an institutional home to bring together critical mass for evidence generation and its use.

Appendix on Breakout Sessions:

The Plenary sessions were followed by parallel breakout sessions and accompanied by a display of posters from young researchers worldwide. These posters illustrated a wide range of topics relevant to the IUHS: approaches to defining economic as well as health burdens; education and local community engagement; devising new metrics for urban health; promoting physical exercise; tailoring solutions to vulnerable groups (e.g. age-dependent asthma exacerbation in cities); decarbonisation of transportation; revitalising urban agriculture; understanding the consequences of urban depopulation and decentralisation (perhaps only transient, e.g. during COVID-19 pandemic); and sharing and implementing good practice across national boundaries.

It is not possible to provide a full account here of the posters or of the multiple breakout sessions but several of the latter are now briefly summarised to illustrate and extend points introduced during the plenary sessions and to exemplify the wide range of themes covered.

<u>Good governance within the city as a complex system</u>

Attempting to define governance draws attention to complex processes. It means more than government and includes multiple stakeholders, often with vested interests, civil society and the private sector. Often, the value and effectiveness of "good" governance is in the eye of the beholder. What then should be the common goals and values of governance in regard to urban health? One proposal is for a human rights-based capability approach focused on context-dependent health, equity and justice within the planetary health framework that acknowledges interdependent often uncontrollable variables and major challenges such as climate change. Governance must cope with uncertainty, value divergence and complexity and is often not as simple as may be portrayed in academic publications. Good governance requires coordinated, participatory transdisciplinary, intersectoral and multilevel planning and action. Meta-governance (governing governance) must be addressed in terms of expectation management, improving inclusivity and diversity, role and interest transparency, minimising the impact of power structures, embodying responsibility and accountability, harmonising long- and short-term goals. Good governance creates trust, relies on both formal and informal cooperation, and is based on lived experience so that community-based approaches within urban administrative settings are the most promising: "*think global, act local*". Academies have an essential role as independent and trustworthy platforms and think tanks for good governance, but a prerequisite is reach-out to citizens to be more inclusive of voices presently often distant to academies and academia.

<u>Addressing implementation gaps</u>

Discussion of governance for urban greening identified some of the reasons for non-implementation, e.g. competing land-use interests, limited funding, lack of integrated planning strategies, and reviewed case studies for good practice. Discussion also

covered how to choose participating stakeholders, e.g. those with special needs, how to engender political will, how to balance other interests including how to deal with different mandates from multiple policy-making departments, and the advantages inherent in networks to provide platforms for mutual learning and advocacy. Examples presented of networks included the Healthy Cities Network, established by WHO Europe in 1988 and the Innovation Community Urban Health Project encompassing science, practice and diverse communities for peer-to-peer learning. Identifying and filling implementation gaps can be facilitated by taking a systems-based approach to conceptualise urban health within a planetary health framework and underpins the measurement of the systemic health of cites to become fit for a sustainable future.

Informal settlements

Such settlements, e.g. in the Caribbean, are associated with major societal problems including exacerbated poverty, lack of employment (with consequences for increased crime), inadequate sanitation, health and other resources. Demographic projections indicate continuing growth by migration from rural areas and relocation from within existing urban areas. Quantification of inequity, vulnerability and marginality may be difficult because data collection often does not track the spatial distribution within urban populations. However, there are practical examples, from Africa (where 1 in 4 citizens are predicted to live in slums by 2030), that illustrate the potential for step-by-step regrowth. For example: partnerships for maternal, newborn and child health within one-stop primary care centres; initiatives to address housing stress in Special Planning Areas, by implementing harmonised building standards and guidelines; and population-level screening and treatment for hypertension. Other discussed initiatives covered early steps for decarbonising transport (electric motor bikes) and the improvement of water provision by supplying facilities at shared point of consumption rather than the much more expensive piping into each house.

Climate change and urban health

Bringing together recent research from diverse studies, this session founds that evidence for the worsening urban health impacts of climate change is rapidly accumulating and vulnerable groups are disproportionately affected. In partnership involving IAP and the NGO Save the Children the compilation of climate-health adaptation case studies has helped to communicate priorities to policy makers and the community. A review of experience in West Africa, where State governance is often weak, identified the importance of informality-driven peri-urban and rural development for urbanisation. Climate change-associated problems such as flooding and excess heat are expected to increase in countries in the region but even where solutions are covered in national adaptation plans; there are implementation and compliance gaps. Generally, barriers and facilitators for responding to climate change are often similar to those experienced for other urban health challenges: e.g. barriers imposed by disciplinary silos and opportunities revealed by community engagement and co-creation of ideas. Academies have a significant role and responsibility in bridging

between settings and stakeholders for communication and uptake of transferrable knowledge.

Soil health-urban health: study case metropolitan area Berlin

Soils play key roles for urban greening and biodiversity, for the retention and filtering of water, as a sink for dusts and for “thermal well-being”, hence fulfilling indispensable urban functions. Urban planning should aim to give access to natural areas in all neighbourhoods, allowing for instant recreation, urban gardening and agriculture, which will contribute to the improvement of local climate conditions and foster the sponge function of urban areas. Soil health contributes to improving urban human health, helps to respond to the negative impacts of climate change on human health and urban infrastructure, and provides places for social encounter, which will stimulate community life. Improve healthy soil awareness across society can be expected to increase the use of soil knowledge in urban planning.

Nature and green space interventions – current overview of clinical evidence

This breakout further discussed what has been termed the urban “Nature Deficit Disorder”, reviewing clinical and epidemiological evidence indicating the health-promoting potential of nature-based interventions, such as forest therapy, ecotherapy, and social prescriptions. Research studies suggest that increased proximity and exposure to natural environments are associated with reduced all-cause mortality, lower cardiovascular disease risk, improved metabolic profiles, and better mental health outcomes. Furthermore, residential greenness correlates with improved birth weight and sleep quality, and emerging evidence suggests potential immunological and psychophysiological benefits. Experimental designs such as nature-based day clinics suggest good effects on quality of life and fatigue in cancer patients compared to indoor settings. Digital nature experiences and 'nature-mimicking' strategies also show promise in promoting biopsychosocial resilience. However, critical gaps remain: the specific 'dose' of nature needed for optimal outcomes is unclear, and the quality and type of green space warrant further investigation. Longitudinal studies and inclusive approaches are recommended to better understand the differential impacts across populations and enhance intervention effectiveness.

Including vulnerable populations in decision making

Vulnerable groups include the poor, ethnic minorities, women, children, the elderly, disabled, those affected by conflict and other disasters, and migrants. A strategy for addressing the health needs of vulnerable groups can be categorised in terms of downstream action (immediate medical interventions), midstream solutions (connecting patients with services or other support) and upstream, long-term solutions addressing the social determinants of health, that require structural and systemic changes. There are various mechanisms for involving vulnerable groups in shared health decision-making that can then extend to related goals for social protection, justice, and urban planning. Vulnerable, marginalised, populations can be involved both in the design and conduct of research and in decision-making, e.g.

through policy participation, inclusive health campaigns, targeted development programmes, and translation of research outputs into innovation.

AI for chronic disease prevention in cities

AI can be used for different purposes related to disease prevention (understanding and action), and supports continuous innovation based on impact measurement. The key enablers need to be improved, including technical foundation (data access and governance, AI governance); trust and ethics (bias prevention and equity, privacy, transparency in AI systems); and system integration (AI supporting not replacing humans, integrating into health care systems and avoiding AI-based silos). Three ideas emerged during discussion of the opportunities and challenges for using AI systems at scale in cities:

- Avoid creating a digital version of today's system and focus on optimising use of data and AI in new health system and health information system architectures. Successful examples must be shared actively since digitization usually replicates existing problems.
- AI provides possibilities to project and display future opportunities where health care systems are predictive and preventive, and social determinants of health enable and encourage healthier lifestyles. These futures can be described in words, pictures and videos to encourage buy-in from broad audiences and help create more urgency for innovation. They can also be personalised to individual circumstances.
- A key challenge in these applications of AI is, how to keep the insights and action on social determinants of health connected both to innovation in health care systems and to innovation in patient's self-care and health management?

Advancing media plurality as a global priority

Economic downturn and inflation are followed by social disparities. Loss of trust in politics and companies leads to increasing social polarisation, fostered by disinformation distributed via social media. *Initiative 18* aspires to introduce a new dimension to the SDGs, an 18th for "*free, safe and sustainable media*". The objectives for media plurality can be encouraged by the following: policy reform (including fair funding mechanisms); awareness in advertising; technology and innovation (including equitable algorithms to highlight credible information sources); education (enabling how to identify disinformation); and cross-sector collaborations to champion diverse, independent voices.