Generating and working with evidence for urban health

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Acknowledgements

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This policy brief is part of a broad effort by the World Health Organization (WHO) to support strategic reflection among urban health decision-makers in Member States. The brief is one of four – each focusing on a cross-cutting theme: generating and working with evidence; governance and financing; innovation; and partnerships and participation. Collectively, these represent the essential “means of implementation” that set the stage for a strategic approach to urban health. The series aims to inform national and subnational decision-makers and relevant technical staff about actions that can foster such an approach.

Protecting people’s health in urban environments is a pressing challenge for national and subnational governments everywhere. In over two-thirds of countries, most people live in cities, and even countries that have yet to reach this threshold are rapidly urbanizing (1). Meanwhile, urban populations continue to increase in absolute and relative terms worldwide – including in slums, which today are home to more than a billion people (2). While cities can offer health and economic benefits and a favourable environment for urban health action, they also pose unique risks and challenges. In fact, while they have become healthier places overall, many avoidable health risks, harms, and inequities persist in cities around the world. In part, this is because urban health practice has at times focused on singular health outcomes, sectoral interventions, or vulnerable groups, without incorporating actions into an overarching holistic approach. While focused work can, and often does, secure real health gains, it risks...
missing important effects arising from the complex nexus of sectors, actors, and environments interacting in urban areas. This can give rise to inefficiencies, unanticipated effects, declining gains, and other adverse outcomes. Only through a strategic, multi-sectoral approach, coordinated across national and local governments and rooted in the values of health equity and justice, can decision-makers realize the full potential of cities and secure urban health for all.

Generating and working with evidence

To take effective action on urban health, decision-makers need a full, clear picture of the state of health and well-being of their urban constituents. This includes the level and distribution of both health outcomes and risks and of the social, environmental, economic, and commercial determinants of health. They also need to be familiar with the stakeholders whose actions affect urban health, positively or negatively; their needs, motivations, priorities, resources, and capabilities; and how they are likely to act in given situations.

All of this requires good data, which, when processed, analysed for insights, and applied to specific questions, can become evidence for or against specific actions or approaches. In addition, when deciding how to address a health challenge, decision-makers often make use of structured information products and evidence-based recommendations from a variety of sources.¹

Thus, generating and working with evidence for urban health broadly involves:

- **gathering data.** The raw, unprocessed facts, figures, measurements, or observations that serve as the foundation for generating information and evidence for urban health can be collected using many different sources and methods. Relevant data may encompass outcomes, exposures, risks, policies, and other factors across a range of sectors.

- **managing data.** Data for urban health must be processed, stored, safeguarded, maintained, and made available to analysts and decision-makers. This requires a regime of standards and tools supported by adequate resources and technical capacities.

¹ This brief seeks to maintain the distinctions among data, analytic insights, evidence, information products, and recommendations. However, in some cases “evidence” is used as a catchall term to improve clarity and readability.
analysing data for useful insights. Informed action depends on decision-makers’ access not only to raw data, but to the products of rigorous synthesis, analysis, and projection (e.g., health impact assessments or scenario-based models of alternative urban interventions).

translating evidence into useful information products and recommendations. For evidence to inform action, data and analytic insights must be organized, structured, and presented in formats (e.g., technical guidance, policy recommendations) that provide context and allow for meaningful, timely, ready interpretation by urban health decision-makers.

Robust evidence for urban health risk factors and impacts supports priority-setting, investment decisions, monitoring of policy and practice, and novel insights about challenges and solutions. Evidence can be strengthened by drawing on diverse data types (e.g., formal or informal, quantitative or qualitative) and sources (e.g., government, academia, civil society, professionals, communities). Urban health evidence should support assessment at the district or neighbourhood level to reveal intra-urban differences and inform priorities. Special effort is needed to ensure that data on vulnerable or excluded populations is generated in an inclusive manner, avoiding uneven representation in consolidated databases and thus in evidence for action – this is essential to reducing the harmful effects of unequal exposure to health risks and to achieving urban health equity and justice. Likewise, potential biases or inaccuracies that may arise in evidence generation or dissemination should always be considered – for example, data and insights from the private sector must be evaluated with due diligence for issues arising from conflicts of interest and sensitivity to the commercial determinants of health.

Broad access to urban health evidence and transparency in how this evidence influences urban health policies and processes supports greater accountability and, often, improved buy-in from urban communities and stakeholders. Indeed, national and subnational governments have a powerful interest in nurturing collective awareness of and support for urban health evidence generation, management, and utilization as part of a broader vision for urban health (see Governance and Financing for Urban Health2). WHO has a longstanding role in generating and curating urban health evidence.

2 https://www.who.int/publications/i/item/9789240082892
evidence in partnership with Member States, city networks, and urban health experts and in supporting knowledge translation for better health policymaking.³

The purpose of this brief

This policy brief reflects and offers guidance on how national and subnational governments⁴ can strengthen the generation, management, and analysis of data for urban health, both independently and in collaboration. It draws on existing international guidelines, academic literature, and insights from a participatory workshop involving experts in research, policy, and practice. The brief is primarily intended for national and subnational decision-makers and their technical staff.

The recommendations and associated supporting actions highlighted below are intended to be complementary and iterative, in line with an integrated, constantly evolving vision for improving urban health. Given substantial variation in needs, capacities, opportunities, and arrangements for generating and working with evidence within and across countries, this guidance is not intended to be prescriptive, but rather to serve as a starting point for adaptation to local city and country contexts. Not all items will be immediately or fully implementable everywhere, and sequencing will vary with local conditions. Additional resources which readers may find useful in advancing these recommendations in their work are available on the WHO Urban Health Repository.⁵

³ See, e.g., https://www.who.int/initiatives/evidence-informed-policy-network
⁴ In this brief, “subnational governments” is used to represent a variety of arrangements at various levels; it always includes local and city governments, but the broader term is sometimes used to improve clarity and readability.
⁵ https://urbanhealth-repository.who.int/home
Recommendations

GENERATING HIGH-QUALITY EVIDENCE FOR URBAN HEALTH

1. Adopt a set of urban health indicators

A well-chosen set of indicators is a strong tool for strategic urban health action. More than an *ad hoc* collection of readily available statistics, an effective set of indicators validly depicts the state of urban health, whether at national level or for an individual city. Indicators can be used to monitor the effectiveness of policy responses, show accountability to commitments, and identify emerging problems. Where used by more than one city or in a framework for both national and city-level data, they can serve to benchmark progress, monitor common trends, and compare policy outcomes.

Indicators should align with good practice recommendations on urban health topics. They should include markers for health inequities and allow data to be disaggregated by different sociodemographic factors, allowing changes in different population groups to be monitored and equity issues to be addressed. Where possible, they should draw on existing sources to reduce logistical burdens and improve continuity. They should also be regularly updated to allow trends to be monitored and timely interventions made where needed.

The process of choosing a set of indicators is an opportunity to engage stakeholders (e.g., civil society, private enterprises, communities), co-define priorities, and promote a shared vision for urban health. Ensuring consistency in collecting indicators can be challenging, especially if data is owned or managed by different entities. Yet, a common framework can be the basis for a better understanding of roles and responsibilities among the diverse public entities working with urban health data; also, formalizing a set of indicators supports the development and maintenance of infrastructure, institutions, and technical capacities for generating and working with urban health evidence more broadly.
To establish an indicator framework:

- Implement a process for developing and regularly (e.g., annually or biannually) reviewing a set of urban health indicators; this should involve key national and subnational technical staff, policymakers, major urban stakeholders, and representatives from urban communities. This process should begin with a review of existing data relevant to urban health. Indicators should be consistent with national (and where relevant, international) data sets and, ideally, integrated into national health information systems.

- In choosing indicators, consider whether well-established frameworks in peer states and cities and others developed by UN agencies and in the scientific literature are locally applicable. Consider adopting or aligning with established frameworks to facilitate wider insights.

- Design indicators for multilevel coherence, establishing a national framework indicator set which can be used – and extended as warranted – for local contexts. Indicators may be collected locally or through national-level processes (e.g., surveys), but should allow for comparison across cities and subnational governments and should align with national and, where possible, relevant global datasets.

- Ensure chosen indicators represent the state of urban health in relation to key social, environmental, economic, and commercial determinants. Indicators should be feasible to gather and frugal, consisting of only those needed to be representative and inclusive. Where applicable, markers that speak to multiple urban health issues should be favoured (e.g., mode share of active travel). They should allow for spatial and social disaggregation, and conform to relevant standards (e.g., the Fundamental Principles of Official Statistics).

- Designate institutional mechanisms and adequate resources for routine collection and management of selected indicators, incorporating these into existing data systems to foster continuity. Where data is collected locally, this may require funding support from national governments. Create coordinating mechanisms to ensure that local indicators are collected across entire urban agglomerations.

- Reinforce the importance of urban health indicators to government stakeholders at national and subnational levels through effective communication campaigns; regular, transparent publication of indicator data; and by incorporating selected indicators as performance measures in national development and economic strategies.

6 A 2018 review of urban health indicators of the physical environment documented 145 tools comprising over 8000 indicators (3).
In recent years, the prominent medical journal *The Lancet* and its companion *The Lancet Global Health* have published two series highlighting the importance of upstream urban planning to promote urban health and sustainability (5,6). These efforts put forward a set of indicators encompassing features and policies related to urban design and transport, with an emphasis on integrated multisectoral planning – critical to a strategic approach to urban health in complex urban environments. A Global Observatory of Healthy and Sustainable Cities was created to host the indicators and has launched a “1000 Cities Challenge” 7, seeking to inspire cities around the world to adopt them. This observatory aims to offer technical and practical guidance, to encourage scaling of solutions, and to provide data comparability, while expanding the indicators to new cities.

2. Adapt and strengthen urban data systems

Formal indicator systems necessarily represent only a fraction of existing or potentially obtainable data related to urban health. Decision-makers can leverage both conventional modes of data collection (e.g., censuses, administrative records, vital statistics) and more innovative methods (e.g., GIS/remote sensing, social media, citizen science) to capture important information for urban health, in some contexts vastly increasing the evidence available for actors across all sectors and scales. Efforts to develop potential sources of urban health data beyond the health sector (e.g., from transport, sanitation, or housing) and to expand coverage of groups for whom data is frequently lacking within formal systems – including those in informal, unplanned, or unregistered settlements or non-standard living situations, or those from vulnerable or excluded groups – are particularly important.

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7 [https://www.healthysustainablecities.org/1000cities](https://www.healthysustainablecities.org/1000cities)
To adapt data systems for urban health:

- Review and map existing data systems relevant to urban health, documenting the coverage, completeness, quality, and usability of different types of evidence from different sources. Consider a diversity of sources, including in non-health sectors, and assess resources for informal settlements and excluded groups, where relevant.

- Explore the feasibility of leveraging novel data and big data sources, including Internet of Things, remote sensing, app-based platforms, social media, mobile phones, and existing urban sensors, among others, to expand the evidence base for urban health (7,8).

- Assess data needs, drawing, where available, on a formal urban health strategy or mandate (see Governance and Financing for Urban Health8), and clearly articulating what data is needed for what purposes. Compare assessed needs with potential resources to identify gaps and set urban health data priorities.

- Improve the spatial and social comprehensiveness of urban health data to allow for disaggregation and fine-scale analysis. For example, increase survey sample sizes to allow meaningful insights for different neighbourhoods (9) and diverse social groups, strengthen civil registration systems to improve birth and death registration and certification (10), distinguish slum from non-slum areas, collect gender-specific data, and integrate earth observation and geospatial information into data collection systems (7).

- Track policies and programmes relevant to urban health, documenting their development and implementation (11) as well as their outcomes and impacts. This should include not only those formally addressing urban health, but those that have significant urban health impacts but originate in or target other sectors.

- Engage communities and other local stakeholders (e.g., NGOs, private sector, academia) to build trust, ensure sensitivity to local norms, reduce information gaps arising from inequities or challenging contexts, and bring a more extensive analytic focus to bear on challenges. Engagement should include joint priority-setting for key data, co-design of processes to generate, manage, and use evidence, and capacity strengthening for collection, analysis, and dissemination.

- Develop protocols for ethical, safe collection of data on sensitive issues to guard against possible harm arising from any group’s involvement. Furthermore, establish conflict of interest and safeguarding principles, to ensure urban health decision-makers can access requisite data to inform interventions, while protecting such data from co-option by health-harming commercial practices, products, goods, and services.

8 https://www.who.int/publications/i/item/9789240082892
Since 2017, the SALURBAL (Salud Urbana en America Latina, or Urban Health in Latin America) project has compiled pre-existing data from Latin American cities, countries, and regional institutions (12). The SALURBAL dataset encompasses 371 cities with more than 100,000 inhabitants across 11 countries in the region, with information on “1) demographic characteristics, 2) mortality, 3) self-reported or measured health, behaviors, and risk factors, 4) social environment, and 5) built environment” (13). In many cases, data is available not only for cities but at sub-city and neighbourhood levels; for some variables, longitudinal data is available. As such, this is an unprecedented resource to support multilevel and cross-sectoral insights about urban health in the Global South. The SALURBAL dataset has already led to novel analytic insights about a host of urban health topics (e.g., air pollution, climate and sustainability, food environments, mental health, transportation, and many others)9; upon project completion, data will be made publicly available for other users.

### DATA MANAGEMENT AND ANALYTICS FOR URBAN HEALTH

1. **Adopt processes and standards for managing urban health data that increase its utility**

Consistent, well-functioning data management systems are a growing priority – strikingly so for urban health, which encompasses a range of types of data across sectors, scales, and stakeholders. By tailoring institutional processes to data management needs and adopting or adapting relevant data guidelines and standards, national and subnational decision makers can enhance the value of data and derived evidence, increasing its availability for researchers, public sector actors, and other users, and – in turn – the likelihood that it will inform programs and policies.

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9 [https://drexel.edu/lac/data-evidence/publications/](https://drexel.edu/lac/data-evidence/publications/)

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To increase the utility of urban health data:

- Clarify or specify which institutions have the authority and responsibility for managing urban health evidence across sectors and levels of governance; this should encompass who is responsible for collecting, documenting, processing, maintaining, and sharing which data and for overall coordination of evidence resources.

- Follow data management best practices, including providing for full documentation of collected data (e.g., in compliance with the Data Documentation Initiative) (14); safe hosting (with consistent rules for storage, back-up, transport, retrieval, and destruction); and ease of use (e.g., in compliance with the FAIR guiding principles for scientific data management (see Highlight below) and the Guidelines for Accurate and Transparent Health Estimates Reporting (GATHER)) (15,16).

- Adopt policies for consultation with end users and communities to ensure that evidence is managed and used in ways that are valid, sensitive to the concerns and privacy of individuals and communities represented, provide benefit to all parties, and address issues of health equity and justice (e.g., compliant with the CARE Principles for Indigenous Data Governance) (17).

- Invest in basic digital and ICT infrastructure and technology for data management (18) and in the technical expertise and experience to interpret and apply data guidelines and standards, implement data management and integration, and support data sharing, analysis, and programmatic translation.

- Support the sustainability of data management systems by providing dedicated financial investment, technical training, and systems upgrading on a regular basis. New standards, processes, and systems should be phased in over time to allow for adequate adjustment, and should, as far as possible, preserve comparability with previously collected data.
Over the past half century, observational and scientific data about the world has proliferated with the expansion of the scientific enterprise and the rise and widespread adoption of digital technologies. This growth in the scale and complexity of information has created corresponding challenges for applying data to research or evidence-based action. The FAIR Guiding Principles for scientific data management and stewardship (16) were developed to guide data ecosystem stakeholders (e.g., data producers, managers, and publishers) in maximizing the utility of data – no matter how relevant, data that cannot be found, accessed, and used have no value. They encompass four foundational principles, that data should be Findable, Accessible, Interoperable and Reusable. They also emphasize the importance of facilitating access not only by human users, but by the applications and computational agents that increasingly are entrusted with data retrieval and analysis.

2. Foster applied analysis of urban health evidence

Evidence-based urban health policy and practice depend on the availability and application of a broad spectrum of analytic expertise and techniques. A range of disciplines, including epidemiology, sociology, engineering, environmental science, economics, finance, and public policy, among others, make use of specialized analytic methods and practical traditions that are vital to urban health. National and subnational decision-makers should create an enabling environment that makes it easier for all stakeholders to contribute to insightful analysis and apply it to pressing urban health issues, including by fostering the political and communications skills essential to making the most of urban health evidence. Urban Health Observatories may offer value for addressing not only this recommendation but others in this brief (see Box 1).

To improve the quality and impact of analysis:

- Assess existing public sector capacities for analysis of urban health data; remedy deficits by promoting the use of open educational resources (e.g., the WHO Health Equity Assessment toolkit) (19), providing relevant technical training, and incorporating new job functions and staff in relevant government entities (e.g., adding public health professionals to data teams) (20).
• Promote a culture of evidence-based action for urban health, including by mandating rigorous evidentiary standards for significant urban policies or interventions (e.g., through health impact assessments), making use of tools that link urban health evidence to action (e.g., Urban HEART) (21), including in non-health sectors (see, e.g., Integrating Health in Urban and Territorial Planning: a Sourcebook) (22), and monitoring and evaluating the extent to which evidence is consulted in developing policy and practice.

• Share analytic insights broadly and encourage regular dialogue across sectors and levels of government and with other stakeholders to improve situational awareness, encourage a sense of shared responsibility for urban health, and foster a cohesive approach to data collection, management, and utilization.

• Encourage equity-sensitive analysis of urban health data, with stratification along socioeconomic, demographic, and spatial dimensions to enable better understanding and more effective solutions for health inequalities.

• Provide funding and opportunities (e.g., events, groups, platforms) to link evidence producers (e.g., academics, universities, health observatories, think tanks) and facilitate sharing of methodologies and insights, promote peer learning and collective approaches to problem-solving, and further knowledge on urban health. Where feasible, develop national technical cross-sectoral networks of urban health professionals that can provide expertise on pressing issues (23).

• Develop institutional processes and opportunities for interaction between evidence producers and decision-makers. These mechanisms should make it easier for decision-makers to communicate their needs to evidence producers while also fostering knowledge transfer to bring rigorous, current evidence into the design of policies and interventions for urban health (24).

• Foster policy diffusion across cities, for example, through production of case studies, adoption of standardized metrics for impact, and engagement with city networks. Often, lack of real-world evidence on implementation and the efficacy of political strategies is a significant barrier to changes in health policy.
HIGHLIGHT

WHO’s Urban Health Initiative was designed to integrate health in urban policymaking for air quality management – a complex challenge spanning multiple sectors and requiring action at multiple scales. The initiative launched a pilot project in Accra, Ghana, in 2015 to integrate health into policies with potential impacts on air pollution. It began by mapping existing national and local policies related to ambient air pollution, household energy, transport, solid waste management, and urban land use. In parallel, it applied scenario-based assessment models to estimate how different future policy choices within these sectors might impact health and air quality. It also implemented capacity-building and stakeholder engagement activities to support the use of tools and guidance and build analytic capacities among public sector workers, researchers, public health professionals, and other stakeholders, and disseminated results widely. The project raised air pollution higher on the agenda of decision makers in Ghana and led to the incorporation of recommendations into local strategies in Accra, including, for example, the Clean Accra Charter and an updated Air Quality Management Plan for the Greater Accra Metropolitan Area.

BOX 1: URBAN HEALTH OBSERVATORIES

In many contexts, the implementation of Urban Health Observatories or the alignment of urban health within existing Urban Observatories can improve approaches to evidence across the board. Urban Health Observatories can play a critical role in data collection, management, and analysis, in producing information products and recommendations, and in interfacing with decision-makers and local stakeholders to support evidence-based action. Such observatories may operate at different scales and can take various institutional forms, depending on context. They can fulfil distinct functions, depending on local needs – including monitoring progress and providing accountability on urban health and health equity indicators, centralizing authority for urban health data governance and analytics, supporting knowledge-to-policy translation, and providing technical guidance. To be effective, Urban Health Observatories require a mandate and clearly defined responsibilities, a suitable complement of dedicated financial, technical, and human resources, and integration into urban governance and well-functioning evidence systems.
A strategic approach to urban health

The recommendations given here for generating and working with evidence are intended to be consistent with a strategic approach to urban health, which should be:

01 **Integrative**
- encompassing, involving, and empowering all stakeholders whose actions contribute to urban health; raising collective awareness of risks and opportunities; creating a shared vision prioritizing collaboration toward unified goals; supporting intersectoral connections and joint work; fostering coherence in action, diversity in ideas, and grass roots ownership.

02 **Contextualized**
- tailoring solutions to local conditions, culture, and values; recognizing that social, environmental, economic, and commercial determinants of health vary widely, as do stakeholders and their needs, priorities, capabilities, norms, and resources; using place-based mechanisms to involve local actors in urban health planning, policy, and practice.

03 **Complexity-informed**
- acknowledging the dynamic complexity of cities and their relationships to broader interdependent systems (e.g., climate, global trade); recognizing feedbacks among social, environmental, and economic determinants of health and health outcomes; avoiding unintended consequences, managing systemic conflicts, and capitalizing on synergies.
Equity-oriented
recognizing that populations in situations of vulnerability face heightened health risks, that exclusion exacerbates health inequalities, and that these are intersectional and compounding; devoting the effort and resources to rectify injustice and counter the self-perpetuating nature of inequities; leveraging urban health decision-making to prevent and reduce inequalities among cities, citizens, neighbourhoods, and population subgroups.

Continuously improving
regularly updating situational awareness through formal and informal mapping, assessment, monitoring, and evaluation; always seeking a higher level of health based on best information about present conditions and likely futures; swiftly reacting to changing circumstances; constantly learning from local experience, accumulated evidence, and engagement with peers and other stakeholders.

Efficient
taking advantage of cross-sector and cross-scale synergies and avoiding incoherence; pursuing integrated decision-making where appropriate; repurposing existing assets, resources, and mechanisms to mitigate the administrative and financial costs of new policies or structures; improving return-on-investment where feasible.

Sufficient
developing and assigning the financial and human resources needed to effectively anticipate, plan for, respond to, and overcome urban health challenges; allocating resources according to needs; investing in capacity building to meet current and future requirements.

Forward-looking
ensuring that short- and medium-term actions address immediate needs, yield tangible results, and demonstrate progress, while emphasizing long-term planning to lay strong foundations and sustainable mechanisms for healthy futures; recognizing the impact of current actions on future options (e.g., via path dependency and lock-in).
References


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