ONE HEALTH JOURNAL

09 / 10.2025

URBAN

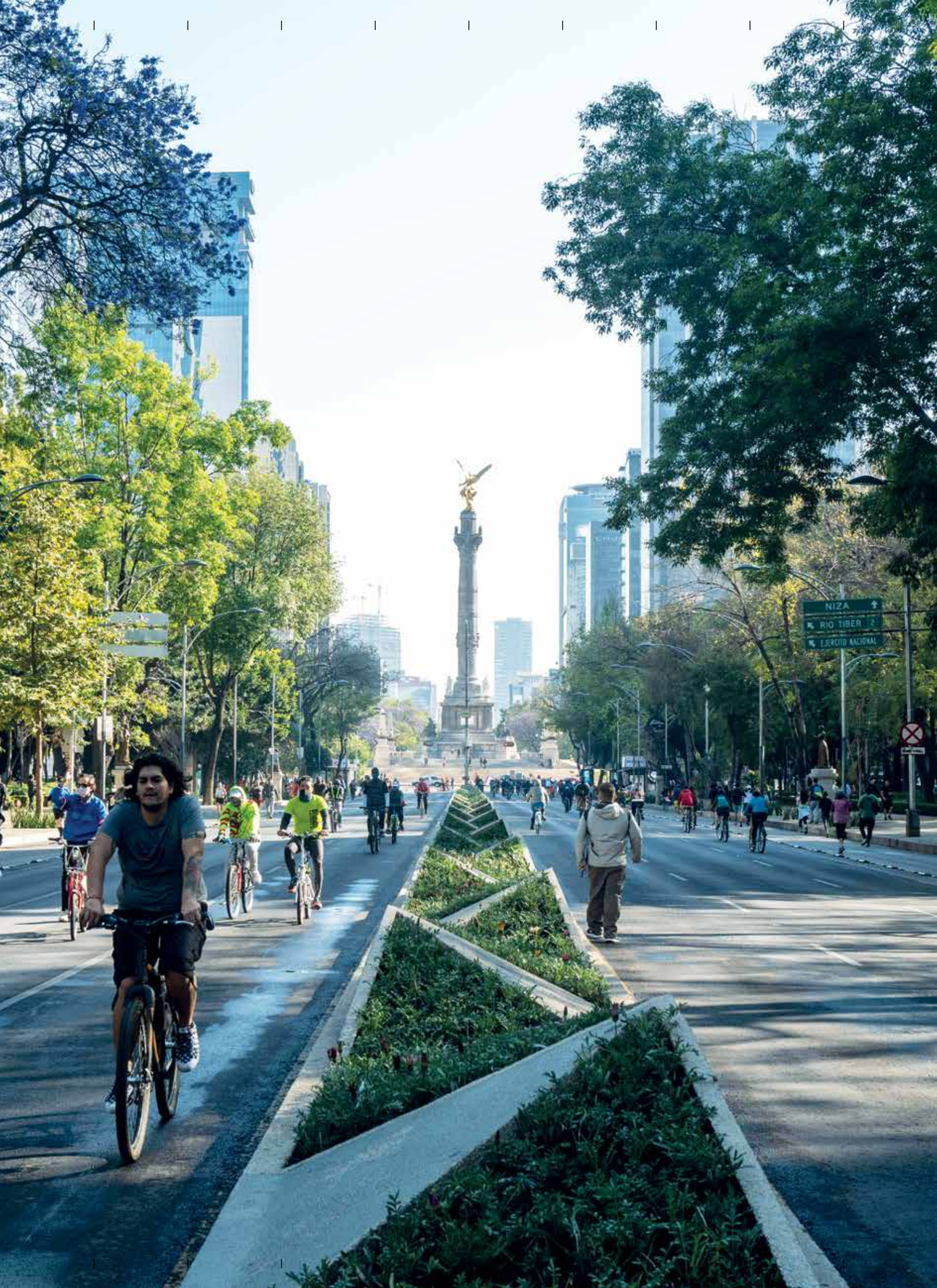
ONE HEALTH CITY

Entro il 2050 il 70% della popolazione mondiale vivrà in contesti urbani. Un numero che cresce ogni anno.
Gli umani lasciano le campagne alla ricerca di nuove opportunità.
Ma dove la densità abitativa è superiore, le pandemie aggrediscono violente: così, nei giorni bui del Covid-19, abbiamo ripreso coscienza del bisogno di equilibrio nel rapporto con la natura. Per questo, guardando alle città del futuro, servirebbe forse Italo Calvino a raccontare una "One Health City" in cui le *Città invisibili* si combinino in un nuovo equilibrio. Perché in fondo, oggi sappiamo che, come gli abitanti di Ersilia, siamo legati a fili invisibili che connettono il nostro destino a quello di tutti i viventi. A quello del nostro pianeta. E il futuro sarà solo nell'equilibrio tra tutti questi elementi. O non sarà.

By 2050, 70% of the global population will be living in urban areas.
A figure that continues to rise each year.
People are leaving rural landscapes in search of new opportunities.
But where population density is highest, pandemics strike hardest. During the darkest days of Covid-19, we were reminded of the need for balance in our relationship with nature. This is why, when envisioning the cities of the future, perhaps we would need Italo Calvino to describe a "One Health City" where *Invisible Cities* merge into a new kind of harmony. Because, like the inhabitants of Ersilia, we now know that we are bound by invisible threads connecting our fate to that of all living beings, and to the planet itself. The future lies in the balance between all these elements. Or there will be no future at all.

ONE HEALTH JOURNAL
TRIMESTRALE
NUMERO 9
OTTOBRE 2025

index


NIZA
RIO TIBER
EJERCITO NACIONAL

DALLA PROSSIMITÀ ALLA *PROXILIENCE*: RIPENSARE LA SALUTE URBANA NEL XXI SECOLO

Carlos Moreno*

La vera capacità di adattamento delle città non risiede unicamente nelle infrastrutture complesse, bensì nella continuità localizzata dei servizi essenziali

Il rapporto tra salute e città presenta una storica ambivalenza: se da un lato le aree urbane concentrano innovazione, servizi sanitari avanzati e infrastrutture, dall'altro costituiscono ambienti ad alta esposizione a rischi sanitari, quali malattie infettive, inquinamento e disuguaglianze socio-spaziali. Sebbene fin dall'antichità le città abbiano sviluppato risposte infrastrutturali ai rischi sanitari - come acquedotti, bagni pubblici e regolamentazione dei mercati - è con l'urbanizzazione industriale del XIX secolo che si afferma la sanità pubblica urbana come ambito disciplinare, in risposta alle condizioni abitative insalubri e alle epidemie ricorrenti. Nel XXI secolo, con oltre metà della popolazione mondiale residente in contesti urbani e una crescita prevista al 68% entro il 2050, le città, in particolare le megacittà del Sud globale, si configurano come spazi contraddittori, in cui opportunità e vulnerabilità coesistono: se da un lato migliorano l'accesso ai servizi sanitari, dall'altro generano ecosistemi urbani segnati da inquinamento atmosferico, inquinamento acustico, stress termico e stili di vita sedentari. In tale prospettiva, l'ambiente urbano viene riconosciuto come un determinante strutturale e multidimensionale della salute, al pari di fattori come reddito, istruzione ed età (Dahlgren & Whitehead, 1991).

L'emergere del paradigma della prossimità propone un ripensamento della pianificazione urbana contemporanea che superi la frammentazione funzionale della città moderna. Infatti, modelli come la **"città dei 15 minuti"** promuovono una riorganizzazione spaziale delle funzioni urbane - declinate in residenza, lavoro, servizi e tempo libero - entro distanze pedonali o ciclabili, in linea con una visione della città centrata sulla scala umana, sulla qualità della vita e sull'equità territoriale.

Tre sono le dimensioni fondamentali attraverso cui prossimità, salute e città si intersecano:

- **prossimità spaziale:** accesso equo a servizi sanitari e mobilità attiva.
- **prossimità socio-ambientale:** disponibilità di spazi pubblici e aree verdi che favoriscano coesione sociale e benessere psicofisico.
- **prossimità alimentare:** accessibilità a cibo sano e sostenibile, tramite le filiere locali.

Crisi recenti - dalla pandemia da COVID-19 al cambiamento climatico, fino all'acuirsi delle disuguaglianze - evidenziano l'urgenza di un modello urbano più equo e resiliente. In tale contesto, la prossimità si configura come leva strategica per integrare salute pubblica, giustizia sociale e sostenibilità ambientale, aprendo a una nuova grammatica della pianificazione urbana orientata al benessere collettivo.

←

Paseo de la Reforma, Città del Messico, Messico
Paseo de la Reforma, Mexico City, Mexico
foto di / photo by **Jermaine Ee**

La città come determinante della salute

Fin dalla Rivoluzione Industriale le città hanno rappresentato tanto motori economici quanto spazi di vulnerabilità sanitaria, in particolare a causa dell'inquinamento ambientale. Nel XX secolo il declino delle malattie infettive lasciò spazio a nuove criticità legate alla mobilità motorizzata, all'inquinamento acustico e alle isole di calore urbane (Urban Heat Islands, UHI).
Secondo l'OMS, l'inquinamento atmosferico è responsabile di circa 7 milioni di decessi prematuri ogni anno. Inoltre, in Europa oltre 113 milioni di cittadini sono esposti a livelli di rumore dannosi, associati a disturbi del sonno, ipertensione, deficit cognitivi e disagio psicologico, mentre le UHI, aggravate dalla carenza di aree verdi e dalla configurazione morfologica urbana, amplificano gli effetti delle ondate di calore, come dimostrato dall'estate del 2003, che causò oltre 70.000 morti premature.
Gli inquinanti impattano la salute su più livelli: *fisiologico* (malattie respiratorie, cardiovascolari, metaboliche); *psicologico* (ansia, stress, depressione, deterioramento cognitivo); *sociale* (aumento delle disuguaglianze, poiché le popolazioni più vulnerabili risiedono in aree più esposte e meno attrezzate).
Si tratta di rischi che richiedono approcci interdisciplinari e politiche integrate, capaci di coniugare giustizia ambientale, salute pubblica e pianificazione urbana sostenibile.

L'inquinamento urbano rappresenta una sfida globale. Il 99% della popolazione mondiale respira aria che supera i limiti di qualità definiti dall'OMS. Le principali fonti di inquinamento - PM2.5, PM10, NO_2, ozono - derivano da traffico, attività industriali e riscaldamento domestico. Nonostante i progressi in Europa e Nord America, la situazione rimane critica in molte aree: in Cina e India l'inquinamento riduce sensibilmente l'aspettativa di vita; in Africa l'uso di biomasse e l'assenza di normative ambientali aggravano l'esposizione; in America Latina, le megacittà combinano inquinamento atmosferico, rumore e stress termico, colpendo le fasce sociali più vulnerabili.

Gli stili di vita urbani sono la causa di patologie croniche non trasmissibili (cardiovascolari, diabete, obesità), dovute alla sedentarietà e a diete poco equilibrate. La prevalenza di ambienti obesogenici, specie nelle megacittà latinoamericane (Popkin & Reardon, 2018), e l'esposizione a stress prolungato incidono negativamente sul benessere psichico. La presenza di verde urbano, al contrario, favorisce il rilassamento mentale e il miglioramento dello stato di salute (Bratman et al., 2015). Inoltre, la salute urbana è profondamente influenzata da fattori socioeconomici: abitazioni precarie e sovraffollate aumentano il rischio di infezioni respiratorie; la povertà energetica amplifica i pericoli legati ai cambiamenti climatici; l'accesso diseguale a servizi sanitari, soprattutto nei "deserti medici", amplifica le disuguaglianze sanitarie.

La prossimità come leva per la salute urbana

Negli ultimi anni, il concetto di prossimità ha assunto un ruolo centrale nella pianificazione urbana e nelle politiche di salute pubblica, come risposta strutturale ai rischi generati dall'urbanistica moderna.
Modelli storici come la polis greca o i borghi medievali erano fondati su una configurazione *prossimale* dello spazio che favoriva coesione sociale e benessere collettivo. Al contrario, la città modernista (Le Corbusier, CIAM) ha introdotto una netta separazione funzionale, con la promozione dell'espansione verso le periferie, la dipendenza dall'automobile, l'isolamento sociale e l'inattività fisica.
Pensatori come Jane Jacobs (1961) e Henri Lefebvre (1968) hanno rilanciato la centralità dello spazio pubblico e della prossimità, contribuendo alla diffusione di modelli come la "città dei 15 minuti", un approccio che, proprio nel corso della pandemia da COVID-19, ha mostrato il proprio valore di resilienza.
La prossimità, tuttavia, non si limita alla sfera urbanistica: ispirandosi al "diritto alla città" (Lefebvre, 1968) e al concetto di beni comuni urbani, contribuisce a ridurre le disuguaglianze oltre ad essere anche uno strumento di equità sociale, capace di promuovere l'accesso a servizi fondamentali e il coinvolgimento delle comunità nella *governance* urbana.
Pertanto, è possibile declinare la prossimità in quattro dimensioni:

- **spaziale:** accesso a strutture sanitarie entro 15 minuti a piedi o in bicicletta (Guagliardo, 2004).
- **alimentare:** filiere corte, accessibilità a cibo sano, sostegno pubblico ai piccoli negozi alimentari nelle aree marginali.
- **sociale:** infrastrutture locali (biblioteche, centri civici) per combattere l'isolamento, in particolare tra gli anziani.
- **ambientale:** accesso quotidiano ad aree verdi per ridurre lo stress, migliorare la salute cardiovascolare e mitigare le isole di calore.

La salute integrata nella città sostenibile

La salute urbana è oggi riconosciuta come una componente imprescindibile della resilienza delle città, soprattutto in relazione alla capacità di fronteggiare crisi sistemiche di varia natura.
Eventi di portata globale come le pandemie, le inondazioni e i disastri tecnologici hanno evidenziato come le fasce più vulnerabili della popolazione siano anche quelle maggiormente esposte a rischi ambientali e sanitari, sottolineando l'inter-

connessione tra condizioni sociali e vulnerabilità urbana. Nel contesto del XXI secolo si configura un nuovo scenario urbano caratterizzato da tre crisi strettamente interconnesse: sanitaria, climatica e sociale. La pandemia da COVID-19 ha messo in luce il ruolo determinante dell'organizzazione socio-spaziale nella dinamica di trasmissione delle malattie infettive, rivelando fragilità strutturali nelle modalità di aggregazione e mobilità urbana. Parallelamente, il cambiamento climatico, manifestatosi attraverso fenomeni estremi quali ondate di calore e alluvioni, ha evidenziato l'inadeguatezza di numerosi assetti urbani nel garantire la sicurezza e il benessere degli abitanti. Infine, le persistenti disuguaglianze nell'accesso ai beni primari hanno amplificato le ingiustizie ambientali, accentuando il divario tra aree e gruppi sociali all'interno delle città.

Tuttavia, alcune esperienze urbane significative, come quelle di Rotterdam, New York, Medellín e Kigali, testimoniano che un'efficace integrazione tra salute pubblica e pianificazione urbana resiliente può contribuire in modo sostanziale alla riduzione dei rischi e alla promozione del benessere collettivo. Questi casi rappresentano modelli di intervento che combinano strategie innovative di *governance*, infrastrutture adattative e inclusione sociale, aprendo la strada a un nuovo paradigma di città capaci di rispondere in modo efficace alle sfide complesse del nostro tempo.

| *Proxilience*: la prossimità come forma evoluta di resilienza

Il concetto di *proxilience*, coniato da Carlos Moreno nel 2024, rappresenta un'evoluzione concettuale che unisce prossimità e resilienza in un unico paradigma urbano. Secondo questa visione, la vera capacità di adattamento delle città non risiede unicamente nelle infrastrutture complesse o nei piani di emergenza centralizzati, bensì nella continuità localizzata dei servizi essenziali, come sanità territoriale, filiere alimentari locali, spazi verdi accessibili e reti di socialità, anche durante le crisi.

Proxilience riconosce l'interdipendenza tra dimensione spaziale e organizzazione sociale, sottolineando come l'assenza di risorse di prossimità aumenti la vulnerabilità delle comunità, specialmente in situazioni emergenziali (pandemie, eventi climatici estremi, blackout infrastrutturali).

Il modello si articola su due livelli:

- **normativo:** riconoscere l'accesso ai servizi di prossimità come principio di giustizia urbana;
- **operativo:** promuovere la pianificazione decentrata, la capillarità dei servizi e l'adozione di strategie di emergenza territorialmente mirate.

Tra le implicazioni strategiche è fondamentale annoverare lo sviluppo della sanità territoriale, il rafforzamento delle filiere agroalimentari corte, la creazione di microclimi urbani resilienti, e l'integrazione di infrastrutture verdi e blu nei tessuti urbani.

Si tratta di un approccio che necessariamente richiede una *governance* intersettoriale capace di coordinare le politiche sanitarie, ambientali e urbanistiche, valorizzando la partecipazione comunitaria attraverso pratiche come orti urbani, cooperative alimentari e progetti di cittadinanza attiva: *proxilience* propone dunque una nuova grammatica urbana, incentrata su prossimità, equità e sostenibilità.

| One Health e pianificazione ecologica

Per affrontare le sfide della salute urbana contemporanea è necessario superare la visione antropocentrica, adottando il paradigma One Health, che riconosce l'interdipendenza tra salute umana, animale e ambientale.

Nelle aree urbane, dove coesistono fauna selvatica, animali domestici, infrastrutture e popolazioni umane, tale approccio si rivela imprescindibile.

La prevenzione delle zoonosi, responsabili di oltre il 60% delle malattie infettive emergenti, rappresenta una sfida cruciale per la salute pubblica, imponendo un ripensamento radicale della pianificazione urbana. In questo contesto, è fondamentale adottare un approccio ecologico integrato che consideri le interazioni tra ambiente, animali e popolazione umana. La conservazione e la tutela di corridoi ecologici assumono un ruolo centrale, poiché favoriscono la biodiversità e limitano il contatto diretto e incontrollato tra specie selvatiche e insediamenti urbani, riducendo così il rischio di trasmissione di agenti patogeni. Parallelamente, è indispensabile la regolamentazione rigorosa dei mercati animali, spesso luoghi di elevata concentrazione e di contatto tra specie diverse, dove possono insorgere focolai zoonotici. Infine, il rafforzamento delle infrastrutture igienico-sanitarie nelle periferie urbane costituisce un elemento imprescindibile per garantire condizioni di vita salubri e controllare la diffusione di malattie, soprattutto in quelle aree caratterizzate da vulnerabilità sociali ed economiche. Solo attraverso un modello di pianificazione urbana che integri questi aspetti sarà possibile affrontare efficacemente il rischio zoonotico, promuovendo la salute pubblica in modo sostenibile e duraturo.

La biodiversità urbana, inoltre, contribuisce al benessere psico-fisico, favorendo resilienza ecologica e salute mentale. Iniziative come le *sponge cities* in Cina dimostrano l'efficacia delle infrastrutture verdi nella gestione delle acque piovane, nella depurazione dell'aria e nella promozione di stili di vita salutari, mentre strumenti come orti urbani e tetti verdi concorrono a mitigare le isole di calore e a rafforzare la sicurezza alimentare locale.

| Tecnologie e dati per la salute

Le tecnologie digitali rappresentano strumenti chiave per integrare salute e *governance* urbana. Sensori ambientali, come nel progetto Luftdaten in Germania, consentono il monitoraggio in tempo reale di inquinamento atmosferico e acustico. L'uso di big data e sistemi informativi geospaziali supporta l'epidemiologia urbana, mi-

Stazione Centrale di Rotterdam, Paesi Bassi
Rotterdam Central Station, Netherlands
foto di / photo by
Jurriaan

gliorando la previsione delle malattie e l'efficacia della pianificazione sanitaria. Progetti quali Sidewalk Labs a Toronto o il sistema integrato di allerta sanitaria di Barcellona dimostrano le potenzialità delle *smart cities*. Le disuguaglianze digitali restano tuttavia una criticità strutturale: l'accesso limitato agli strumenti tecnologici da parte delle fasce sociali più vulnerabili rischia di amplificare le disparità preesistenti e rende imperativa l'inclusione digitale in ogni strategia innovativa.

Governance e politiche pubbliche per la salute urbana

La *governance* della salute urbana ha progressivamente superato i confini nazionali, configurandosi come una vera e propria diplomazia urbana della salute. Oggi le città non solo implementano politiche, ma producono modelli, partecipano a reti transnazionali e contribuiscono alla definizione di agende globali.
Dagli anni Ottanta, con l'avvio del programma Healthy Cities dell'OMS (1986), è emerso un modello di cooperazione interurbana che promuove politiche integrate su salute, ambiente, equità e partecipazione. Attualmente, oltre 1.500 città fanno parte della rete e condividono strategie e buone pratiche.
Nel corso delle recenti epidemie sanitarie (SARS, COVID-19), molte amministrazioni locali si sono dimostrate più reattive degli Stati nazionali, impegnandosi diretta-

mente nella gestione dei trasporti e nella predisposizione di alloggi per senzatetto, oltre ad allestire mercati alimentari e campagne di informazione. Reti come C40 hanno collocato la salute tra le priorità della lotta al cambiamento climatico, mentre organizzazioni come ICLEI ed Eurocities sono in grado di influenzare le politiche europee sulle questioni di mobilità sostenibile e qualità dell'aria.

| Reti urbane e cooperazione decentrata

Molte città nel mondo, da Barcellona con l'implementazione dei superblocchi a Medellín con le sue profonde trasformazioni sociali, fino a Milano e Parigi impegnate nella promozione di sistemi alimentari sostenibili, si configurano come autentici laboratori di innovazione urbana, capaci di generare modelli replicabili in diversi contesti. Tuttavia, permangono numerose criticità strutturali che ne ostacolano il pieno potenziale. Tra queste si riscontrano la frammentazione delle responsabilità tra i vari livelli istituzionali, che genera inefficienze e difficoltà nella coordinazione delle politiche urbane; la carenza di risorse economiche e infrastrutturali, soprattutto nelle città del Sud globale che faticano a sostenere interventi complessi e duraturi; infine i rischi legati alla legittimazione democratica nei processi decisionali multilivello, che possono compromettere la partecipazione effettiva dei cittadini e la trasparenza amministrativa. Per superare tali ostacoli e promuovere una *governance* urbana realmente efficace e inclusiva sarà essenziale estendere l'attenzione anche alle città intermedie e ai contesti in via di sviluppo, favorendo un modello policentrico di governo territoriale capace di integrare diverse scale e attori sociali in un processo condiviso di innovazione e sviluppo sostenibile.

| Indicatori per la salute

Una *governance* urbana efficace e inclusiva richiede innanzitutto la disponibilità e l'utilizzo di indicatori integrati, capaci di fornire una lettura multidimensionale e dettagliata delle disuguaglianze intra-urbane. L'OMS ha sviluppato una serie di metriche che integrano dati epidemiologici, ambientali e socioeconomici al fine di offrire un quadro complessivo delle condizioni di salute e benessere nelle aree urbane.

Particolarmente rilevanti sono gli indicatori di prossimità, che si allineano al paradigma della "città dei 15 minuti" e che valutano la percentuale della popolazione che risiede entro una distanza percorribile a piedi da servizi essenziali quali strutture sanitarie, aree verdi, istituti scolastici e mercati alimentari.

Inoltre, l'impiego di sofisticati sistemi di informazione geografica (GIS) facilita la mappatura puntuale delle vulnerabilità territoriali e restituisce uno strumento indispensabile per la pianificazione e la definizione di politiche pubbliche mirate. Di fatto, questi sistemi permettono di identificare con precisione le aree più svantaggiate e di orientare gli interventi finalizzati alla riduzione delle disuguaglianze, diventando strumenti fondamentali nella promozione di una *governance* urbana più equa, trasparente e fondata su dati empirici. La combinazione di tali strumenti rappresenta dunque un elemento cruciale per sostenere processi decisionali informati e per favorire lo sviluppo di città resilienti, sostenibili e maggiormente inclusive.

Conclusione e prospettive

L'analisi proposta mette in luce la duplice natura delle città, che si configurano contemporaneamente come fonti di vulnerabilità e come risorse fondamentali per la salute pubblica. Fattori ambientali, quali l'inquinamento atmosferico e l'isola di calore urbana (UHI), insieme a determinanti comportamentali, come la sedentarietà e lo stress, nonché a condizioni sociali caratterizzate da disuguaglianze ed esclusione, delineano un quadro complesso e critico. Tuttavia i contesti urbani rappresentano anche leve strategiche di cambiamento e innovazione.

In questo senso, il concetto di prossimità urbana, inteso nelle sue dimensioni spaziali, sociali, ambientali e alimentari, emerge come una strategia trasversale capace di promuovere benessere, equità e resilienza. L'evoluzione teorica verso il paradigma della *proxilience* rafforza tale visione, ponendo l'accento sull'importanza della capacità adattativa a livello locale, sulla ridondanza e accessibilità dei servizi, nonché sul ruolo centrale della comunità nella costruzione di sistemi urbani sostenibili e inclusivi.

Per tradurre queste prospettive in politiche urbane efficaci e durature, è indispensabile promuovere forme di *governance* intersettoriali e multilivello, che favoriscano la collaborazione tra diversi attori istituzionali e sociali. È altresì fondamentale integrare indicatori di prossimità nelle agende di pianificazione urbana, al fine di monitorare e ridurre le disuguaglianze territoriali. Parallelamente, si rende necessario un aumento degli investimenti pubblici mirati a garantire equità territoriale e giustizia ambientale, supportati da processi partecipativi che coinvolgano attivamente le comunità locali.

La progettazione di città più sane e resilienti non rappresenta un ideale utopico, bensì una responsabilità condivisa che coinvolge urbanisti, amministratori pubblici, ricercatori e cittadini, chiamati a cooperare per progettare ambienti urbani capaci di rispondere efficacemente alle complesse esigenze del presente e del futuro.

***** *Questa versione costituisce una traduzione sintetica del contributo originale in inglese a pag.20.*

Giardino Botanico di Medellín, Colombia
Medellín Botanical Garden, Colombia
foto di / photo by Oneil Williams

FROM PROXIMITY TO *PROXILIENCE*: RETHINKING URBAN HEALTH IN THE 21ST CENTURY

Carlos Moreno

A city's true capacity to adapt lies not only in complex infrastructures, but also in the sustained availability of essential services at the local level

Health and cities have always had an ambivalent relationship. Cities are places of innovation, progress and concentrated medical services. Still, they are also spaces where health threats crystallise, whether in the form of infectious diseases, environmental pollution, or social inequalities.

Since ancient times, cities have faced epidemic risks and public health challenges by developing aqueduct systems, public baths, and regulating food markets. But it was with the industrial urbanisation of the 19th century that urban public health emerged as a discipline, in response to unsanitary living conditions, overcrowding and epidemics of cholera and tuberculosis (Rosen, 1993).

In the 21st century, urbanisation has reached unprecedented levels: more than 56% of the world's population now lives in cities, and this proportion is expected to exceed 68% by 2050 (United Nations, 2019). Megacities, particularly in the Global South, offer both opportunities and risks. They provide greater access to health services, but also generate pathogenic environments characterised by air pollution, noise, heat stress and sedentary lifestyles.

In this context, the city is increasingly seen as a major determinant of health, on a par with age, income, and education (Dahlgren & Whitehead, 1991).

The emergence of the proximity paradigm is profoundly renewing this relationship between health and urban planning. It proposes moving beyond the functionalist model of the modern city, which has separated places of living, working, consumption and leisure, to bring these dimensions closer together within areas accessible on foot or by bicycle. This approach has been widely popularised under the name "15-minute city" (Moreno et al., 2021), but it is part of a long tradition of thinking about the human scale of cities, from Jane Jacobs (1961) to contemporary approaches to sustainable urban planning.

Health, the city and proximity are linked in three main ways:

- firstly, **spatial proximity:** the ability to easily access health services, as well as active mobility infrastructure and everyday amenities. Research shows that distance to care directly influences the use of services, while urban compactness promotes physical activity (Guagliardo, 2004; Frank et al., 2004).
- secondly, **social and environmental proximity:** living in neighbourhoods where high-quality public spaces strengthen social ties, and where nature is present in everyday life. Access to green spaces within 300 metres of home is

now recommended by the WHO (2016) for both its psychological and physiological benefits (Twohig-Bennett & Jones, 2018).
- thirdly, **food proximity:** the ability to obtain healthy and affordable food in one's neighbourhood. The rise of "food deserts" and "food swamps" in urban areas has been identified as a factor contributing to obesity and metabolic diseases (Walker, Keane, & Burke, 2010). Conversely, food relocalisation and short supply chains promote better nutrition and strengthen urban food security (FAO, 2018).

The triptych of health, city and proximity also fits into a context of global crises. The COVID-19 pandemic has revealed the fragility of urban systems in the face of health threats and highlighted the importance of localised access to essential services. Climate change is increasing the frequency and intensity of heatwaves, floods, and air pollution, exposing urban populations to new health risks (IPCC, 2022). Finally, rising social inequalities are reflected in a measurable health gradient at the intra-urban level: life expectancy can vary by ten years from one neighbourhood to another in the same city (Marmot, 2010).
In the face of these challenges, proximity is a lever for integrating urban resilience and health equity. It brings residents closer to vital resources, reduces exposure to environmental risks, strengthens social solidarity and promotes ecological sustainability. Cities that adopt this approach become not only places of care, but also environments of prevention and well-being.
This introduction, therefore, proposes to situate the debate in a historical, conceptual, and forward-looking perspective. It places urban health within the field of integrated public policy and multi-level governance. It reminds us that cities have become central players in global health issues, drawing on international networks (WHO, C40, ICLEI) and local innovations.
Thinking about health, cities, and proximity leads to a rethinking of the grammar of contemporary urban planning. It is no longer just a question of organising flows and functions, but of creating environments that are conducive to life. In this new paradigm, health is not a sector, but an urban common good, which involves all local policies and determines the sustainability of societies.

The city as a determinant of health

| Pollution and urban pathologies

Since the Industrial Revolution, the city has established itself as a space of human, economic, and technological concentration, but also as a place of increased exposure to multiple forms of pollution. Where density and innovation translate into economic and cultural opportunities, they also generate negative externalities that weigh heavily on the health of city dwellers. Urban public health is thus profoundly affected by air quality, noise, and heat islands, which today constitute the main non-communicable environmental risks for city dwellers.
The historical legacy of these issues is considerable. In the 19th century, European and North American industrial cities were quickly associated with toxic environments. Coal smoke, stagnant sewage and the lack of waste collection caused recurrent epidemics of cholera, typhoid, and tuberculosis.
These urban health crises gave rise to the first modern public health policies: the construction of sewers in London under the leadership of Joseph Bazalgette, the regulation of industrial pollution, vaccination campaigns and the creation of health inspections. The city became not only a hotbed of disease, but also a laboratory for its prevention.
In the 20th century, thanks to medical advances, sanitation policies, and general improvements in infrastructure, major infectious diseases declined. However, rapid urbanisation gave rise to new, more insidious, and diffuse challenges: air pollution from motorised transport, constant noise from infrastructure, and heat trapped by impermeable surfaces. These factors, less visible than the epidemics of yesteryear, are nonetheless responsible for a considerable burden of disease.
The World Health Organisation estimates that air pollution causes nearly seven million premature deaths worldwide each year, while urban noise is recognised as the second biggest environmental threat to health in Europe after air pollution. As for heat islands, their impact is increasing with climate change and is already causing thousands of preventable deaths during summer heatwaves.
These urban pollutants have a threefold impact on health:
- **physiologically,** they increase the risk of respiratory, cardiovascular, and metabolic diseases, as well as sleep disorders.
- **psychologically,** it promotes stress, anxiety and cognitive disorders.
- **socially,** it exacerbates inequalities, as disadvantaged populations often live in areas most exposed to pollution, such as near major road, industrial areas, or in poorly insulated and overheated housing.

While pollution profiles vary across different regions of the world, no city is completely immune. In China and India, fine particulate matter regularly reaches dangerous levels, leading to a massive reduction in life expectancy. In Europe and North America, the relative improvement in air quality over the last few decades, thanks to policies to reduce vehicle and industrial pollution, has not prevented millions of years of life being lost. In fast-growing African cities, the lack of fuel regulation, the widespread use of firewood and informal urbanisation create highly polluted environments, often without reliable epidemiological monitoring. Latin America, with

its megacities such as Mexico City, São Paulo, and Lima, illustrates the convergence of air pollution, traffic noise and heat stress, with the poorest paying the heaviest price.

These nuisances also represent a major economic and political challenge. The World Bank (2016) has estimated that air pollution costs more than $5 trillion annually in lost well-being due to hospitalisations, reduced productivity, and premature mortality.

The management of urban pollution is therefore not solely a public health issue: it also affects the economy, the environment and governance. Cities that invest in air quality, noise reduction and greening not only improve the health of their inhabitants, but also enhance their economic attractiveness and sustainability.

Urban pollution poses significant scientific and methodological challenges. How can individual exposure be accurately measured in an environment where air, noise and heat constantly interact? How can the cumulative effects of these different risk factors, which are intertwined with social and behavioural variables, be isolated?

Recent approaches combine epidemiology, environmental science, health geography and climate modelling to produce robust indicators that are used by decision-makers to guide policy. These interdisciplinary approaches provide a better understanding of the impact of urban pollution on health and enable the development of strategies tailored to local contexts, while forming part of a global vision of the health challenges of urbanisation.

The modern city has become the scene of a new pathological ecology, marked by invisible but omnipresent risks. Air pollution, noise and heat islands are not just everyday nuisances, but structural factors in morbidity and mortality. They remind us that urban health cannot be separated from land use planning, environmental planning, and social justice.

Air pollution

According to the World Health Organisation (WHO, 2022), 99% of the world's population breathes air that exceeds recommended quality limits (WHO, 2022). Fine particulate matter (PM2.5 and PM10), nitrogen dioxide (NO_2), and tropospheric ozone are among the primary pollutants associated with road traffic, industry, and heating. Several meta-analyses have demonstrated a correlation between chronic exposure to PM2.5 and increased cardiovascular and respiratory mortality (Pope and Dockery, 2006). In large cities across Asia, as well as in Europe and Latin America, the health impact of air pollution translates into an estimated loss of life expectancy of between 1 and 2 years in the most heavily exposed areas (Air Quality Life Index [AQLI], 2021).

Noise pollution

Urban noise, mainly from road, rail and air traffic, is another major health determinant. The European Environment Agency estimates that 113 million people in Europe are exposed to noise levels above health thresholds (EEA, 2020). The consequences go beyond hearing problems: they include sleep disturbances, increased stress, anxiety, and the risk of high blood pressure. Chronic noise also contributes to a measurable decline in cognitive performance, particularly in children attending school in noisy areas (Stansfeld & Matheson, 2003).

Urban heat islands

The urban heat island (UHI) effect exacerbates the vulnerability of city dwellers during heatwaves. Due to mineralisation, lack of vegetation and anthropogenic heat emissions, temperatures in city centres can exceed those in surrounding rural areas by 5 to 7°C. The 2003 European heatwave caused more than 70,000 premature deaths, the majority of which occurred in urban areas (Robine et al., 2008). Climate change is making these phenomena more frequent, placing the issue of UHI at the heart of urban health strategies (Cheval et al., 2024).

Thus, cities are spaces where multiple forms of pollution interact to create a pathogenic environment, the cumulative effects of which exacerbate health risks.

| Sedentary lifestyles and chronic diseases

The urban environment has a profound influence on lifestyles. The global urban transition is accompanied by an epidemiological transition: infectious diseases are declining, while chronic non-communicable diseases (CNCDs) – cardiovascular disease, type 2 diabetes, obesity, cancer – are on the rise.

Car-centric urban planning and sedentary lifestyles

Sprawling cities, organised around the car, reduce opportunities for active mobility. However, physical inactivity is identified by the WHO as the fourth leading risk factor for global mortality, responsible for 6% of deaths (WHO, 2010). Longitudinal studies have shown that residents of dense, mixed-use neighbourhoods with good public transportation links engage in higher levels of daily physical activity, with a measurable impact on body mass index (Frank et al., 2004).

Obesity and metabolic diseases

The global prevalence of obesity has tripled since 1975 (WHO, 2021b). The phenomenon particularly affects urban environments where processed diets are combined with low daily energy expenditure. In Latin America, megacities such as Mexico City and São Paulo are experiencing an explosion in childhood obesity, directly linked to urban food environments saturated with fast food and sugary drinks (Popkin & Reardon, 2018).

A joint report by UNICEF, WHO and the World Bank (2023) highlights that 1 in 3 children is overweight or obese in some countries in the region.

Mental health and urban rhythms

Urban sedentary lifestyles are not limited to somatic pathologies: they are accompanied by mental health issues. Fragmented lifestyles, stress related to motorised travel and a lack of breathing space promote depression and anxiety. A study by Stanford University showed that walking for 90 minutes in a natural environment significantly reduces neural activity in the areas of the brain associated with depressive rumination, compared to walking in a dense urban environment (Bratman et al., 2015).

The city therefore provides a framework that shapes health behaviours: depending on its organisational model, it can either exacerbate sedentary lifestyles and NCDs or, conversely, encourage active mobility and prevention.

| Social inequalities in health in urban areas

Cities are hotbeds of inequality. While they offer access to medical and educational infrastructure, they also reproduce and amplify socio-spatial disparities that have a direct impact on health.

Unsanitary housing and energy poverty

Urban housing is a major determinant of health. Damp, mould and overcrowding increase the risk of respiratory and infectious diseases. In Europe, an estimated 7,2% of low-income households live in wet or substandard housing (Eurostat, 2020). Energy poverty – the inability to heat or cool one's home properly – exposes people to cardiovascular and respiratory diseases and increased mortality during extreme weather events.

Unequal access to healthcare

Geographical proximity to healthcare facilities does not guarantee equal access. Financial, cultural, and administrative barriers limit access to care. In many cities in Africa and Asia, informal settlements (slums) are home to millions of people without adequate health coverage, who are dependent on under-resourced clinics. Even in wealthy countries, urban social geography creates "intra-urban medical deserts", where the density of medical services is significantly lower than in affluent neighbourhoods (Marmot, 2010).

Environmental inequalities

Disadvantaged populations often live in areas most exposed to environmental risks: proximity to major roads, polluted industrial areas, lack of green spaces. This phenomenon, described as "environmental injustice", has been documented in the United States (Bullard, 2000) as well as in Europe and Latin America. In Paris, for example, the density of green spaces has long been significantly lower in the working-class neighbourhoods of the east than in the central, middle-class districts.

These social and spatial inequalities translate into a health gradient: life expectancy can vary by 6 to 10 years between neighbourhoods in the same city, as illustrated by London, Glasgow, and Marseille (Marmot, 2010). Far from being neutral, cities structure the social distribution of health.

Proximity as a lever for urban health

Over the last few decades, proximity has become a central concept in thinking about urban planning and health. The emergence of this paradigm in contemporary urban planning is a direct response to the health risks posed by the modern city. It promotes an approach that aims to bring individuals closer to the resources essential to their well-being: health services, food, green spaces, and places for socialising. Health is therefore no longer just a question of hospital systems or specialised equipment, but also of everyday living conditions, shaped by the very organisation of the city.

Although proximity may seem like an innovative concept today, it has deep roots. The great urban traditions, from the Greek polis to the medieval European city, were based on the idea that basic needs should be accessible within walking distance. The neighbourhood, a local living space, was home to crafts, markets, places of worship and housing, ensuring a link between social cohesion and collective health. The industrial revolution and modern urban planning disrupted this balance by favouring functional specialisation and motorised mobility. The theories of Le Corbusier and the CIAM (International Congresses of Modern Architecture) legitimised the strict separation of urban functions — living, working, leisure and transport — resulting in urban sprawl that distanced residents from their essential needs. This spatial fragmentation has had profound consequences on health: increased sedentary lifestyles, car dependency, air pollution, stress related to travel times, and social isolation.

In response to these harmful effects, several voices began to speak out in the mid-20th century in favour of local urban planning. Jane Jacobs, in her seminal work *The Death and Life of Great American Cities* (1961), defended the importance of diversity of use, street vitality and functional diversity as conditions for urban safety and health. Henri Lefebvre, in his reflection on the "right to the city" (Lefebvre, 1968), emphasised the need to design accessible spaces where residents can actively participate in social and political life. These critical approaches have continued to inspire contemporary movements to rehabilitate proximity, now widely integrated into the discourse on urban sustainability.

Proximity, popularised by the **"15-minute city"** concept, which has spread worldwide (a, 2024), has once again become a central issue in the context of the multiple crises facing contemporary cities. The COVID-19 pandemic has highlighted the vulnerability of ci-

ties organised around long-distance mobility and car dependency. When travel was restricted, residents deprived of local services found themselves in situations of functional deprivation: difficulties in accessing primary care, fresh food and breathing space. Conversely, neighbourhoods with a resilient local fabric – local shops, accessible green spaces, local health networks – were better able to withstand lockdown. This experience reinforced the idea that a healthy city is first and foremost a city of proximity, where essential needs can be met on a human scale.
This paradigm also responds to the climate emergency. Reducing motorised travel, encouraged by proximity, helps to reduce greenhouse gas emissions and air pollution. It encourages walking and cycling, thereby reducing the chronic diseases associated with a sedentary lifestyle. By bringing residents closer to green spaces, it increases resilience to heat waves and improves mental health. The WHO now recommends access to green spaces within 300 metres of the home, which is precisely in line with the logic of proximity.
Several cities around the world are experimenting with or institutionalising proximity policies with convincing results. In Paris, the concept of the "15-minute city" has been used to reorganise essential services at the neighbourhood level: schools, health centres, markets, and cultural facilities. The aim is to reduce car dependency and promote active mobility. In Barcelona, "superilles" (superblocks) limit motorised traffic within residential areas, freeing up public space for pedestrians, cyclists, and community activities. Studies show that these developments have significantly reduced air pollution and noise, while increasing social interaction. In Medellín, Colombia, the creation of urban cable cars connecting outlying neighbourhoods to centres of activity, combined with the establishment of local libraries and parks, has not only improved access to services, but also reduced crime and strengthened social cohesion. In Copenhagen, the systematic development of cycling as a mode of daily transport, supported by a continuous and secure cycling infrastructure, has generated measurable benefits in terms of cardiovascular health and reduced air pollution.
These examples illustrate that proximity is not just a matter of urban planning, but a powerful lever for public health and social justice. It reduces inequalities by ensuring universal access to essential services, regardless of income or vehicle ownership. It strengthens resilience by bringing vital infrastructure closer to residents. It promotes mental health by creating environments conducive to socialising and conviviality. It reconnects the city with nature by integrating green spaces at the neighbourhood level and promoting local urban agriculture.
Proximity also invites us to rethink urban governance. It requires breaking down barriers between public policies and adopting a cross-cutting approach where health, urban planning, mobility, food and the environment are considered as interdependent dimensions. It values the role of local authorities, which are closest to the concrete needs of residents and capable of planning at the neighbourhood level. It also involves active citizen participation: participatory budgets, food cooperatives, shared gardens and community care schemes are all ways in which residents can contribute directly to the creation of their local environment.
Proximity has a strong ethical and political dimension. In a context marked by growing social and territorial inequalities, it offers a vision of urban justice. By guaranteeing equitable access to healthcare, education, food and nature, it corrects the imbalances inherited from decades of segregative urban planning. It enshrines the right of every citizen to live in an environment conducive to good health, regardless of their neighbourhood or income. It thus ties in with thinking on the "right to the city" and urban commons, which place health and well-being at the heart of local democracy.

The proximity paradigm redefines the way health is thought about in cities. It is no longer just a question of treating pathologies in distant hospitals, but of preventing risks and promoting well-being daily. It is no longer just a question of rationalising flows, but of creating human, liveable, equitable and resilient environments. In a world where health and climate crises are on the rise, proximity appears to be one of the most effective levers for transforming cities into places of sustainable health, accessible to all and promoting social justice.

| Spatial proximity

Access to healthcare

The availability and accessibility of healthcare services are a key aspect of spatial proximity. Studies show that geographical distance is a strong determinant of healthcare use: residents living within a 15-minute walk or bike ride of a healthcare centre are significantly more likely to use preventive healthcare services (Guagliardo, 2004). The WHO (2016) emphasises the importance of local primary healthcare in cities to reduce intra-urban inequalities.

Active mobility

Spatial proximity is not only about institutional health, but also about citizens' ability to move around easily for their daily needs. The concept of the "15-minute city" (Moreno, 2024a) illustrates this ambition: to provide essential services in every neighbourhood to promote active mobility (walking, cycling), with a direct impact on reducing sedentary lifestyles and pollution.

Access time and health equity

In many cities, access times to healthcare vary greatly depending on the neighbourhood. A study of European cities has shown that the density of general practitioners varies significantly depending on the socio-economic status of neighbourhoods, highlighting a spatial health gradient (Comber, Brunsdon, & Radburfn, 2011). Spatial proximity thus becomes a lever for urban justice: reducing distances is equivalent to reducing health inequalities.

| Food proximity

Access to healthy food

Urban food environments have a strong influence on nutritional habits. The concept of "food deserts" refers to metropolitan areas where access to fresh and healthy produce is limited. Conversely, "food swamps" are areas saturated with fast food and ultra-processed products (Walker, Keane & Burke, 2010). Both phenomena are associated with an increased risk of obesity and metabolic diseases.

Short supply chains and food security

Strengthening short supply chains and local markets brings producers and consumers closer together, with nutritional and health benefits. In Europe, municipal programmes such as the Milan Urban Food Policy Pact encourage food relocation to combat malnutrition and food insecurity (FAO, 2018). Local food also has an ecological dimension: reducing food transport distances helps to reduce the carbon footprint and improve the sustainability of the urban system.

Public policy

Some cities are experimenting with targeted subsidy policies to support the establishment of grocery stores offering fruit and vegetables in disadvantaged neighbourhoods. Research conducted in the United States shows that the establishment of local supermarkets in "food deserts" improves the consumption of fresh produce, provided that this initiative is accompanied by nutritional education (Cummins et al., 2014).

| Social proximity

Public spaces and mental health

Urban health is not limited to biological indicators: it also includes psychosocial factors. Local public spaces play a key role in promoting social interaction, which is a protective factor against depression and isolation. Holt-Lunstad, Smith and Layton (2010) showed that social integration reduces all-cause mortality by 50%, an effect comparable to quitting smoking.

Combating isolation

Dense but fragmented cities can exacerbate social isolation, particularly among older people. Conversely, neighbourhoods with local infrastructure – libraries, cultural centres, community centres – promote social cohesion and mental health. Research in Scandinavia shows that proximity to social facilities helps delay the onset of dependency in older people (Forsman, Herberts, Nyqvist, Wahlbeck, & Schierenbeck, 2013).

Relational equity and inclusion

Social proximity is not limited to physical distance: it also refers to a city's ability to provide spaces for intercultural and intergenerational encounters. Experiences in Medellín (Colombia), with park libraries set up in disadvantaged neighbourhoods, illustrate how local facilities can become a vehicle for community health, reducing violence and strengthening social capital (Corburn, 2017).

| Environmental proximity

Green spaces and health

Proximity to green spaces directly improves physical and mental health. A meta-analysis of 143 studies found that the presence of urban green spaces is associated with a significant reduction in cortisol levels, improved cardiovascular health, and a lower risk of premature mortality (Twohig-Bennett & Jones, 2018). The WHO (2016) recommends a minimum of 9 m^2 of green space per inhabitant and access to a green space within 300 metres of the home.

Daily nature and well-being

Environmental proximity is not just a question of large parks: the presence of street trees, shared gardens or green roofs contributes to quality of life. The experience of Singapore, where more than 50% of urban cover is green, shows the impact of a systematic greening policy on public health (Tan et al., 2013).

Climate adaptation and health

Local greening also helps to reduce the effects of urban heat islands by providing protective microclimates. In the context of global warming, local green infrastructure is becoming an essential tool for health resilience (Kabisch et al., 2017).

Health integrated into the sustainable city

| Resilient cities and health in the face of crises

Contemporary cities face multiple crises – health, climate, social – that test their resilience. Urban health can no longer be considered in isolation, but as a constituent element of the resilience of urban systems. This idea is now widely accepted in scientific and institutional circles: a city is only truly sustainable if it protects life, not only in times of stability but especially in the face of shocks that threaten its functioning. Recent crises have shown that urban failures primarily affect vulnerable populations, amplifying social and territorial health inequalities.

Historically, epidemics and natural disasters have always shaped cities. The Black Death of the 14th century led to a rethinking of urban density and a strengthening of quarantines. The Great Fire of London in 1666 led to reconstruction with increased safety standards. The flooding of Saint Petersburg in 1824 and Paris in 1910 highlighted the need for protective infrastructure. More recently, major industrial disasters such as Bhopal in 1984 and Chernobyl in 1986 have demonstrated that urban crises transcend local boundaries and have global health repercussions.

The 21st century has seen the rise of three types of interconnected crises. First, there are health crises, of which the COVID-19 pandemic has been a stark reminder. The way cities have dealt with the pandemic has shown that density is not in itself a factor of vulnerability, but that spatial and social organisation determines resilience. Neighbourhoods with local health services, accessible public spaces and strong community networks were

more resilient, while those dependent on long commutes and marked by social inequalities experienced higher incidence and mortality rates. This crisis has highlighted the need to design cities that can ensure continued access to healthcare, food and fresh air, even in emergency situations.

Climate crises, meanwhile, are manifested in the intensification of heatwaves, floods, storms and air pollution. Cities, with their high population density and massive artificialisation, amplify these phenomena. The most striking example remains the European heatwave of 2003, which caused more than 70,000 additional deaths, mostly in urban centres where heat islands trapped night-time heat and prevented the human body from recovering. Since then, numerous heatwaves in New Delhi, Karachi, Montreal, Athens and Shanghai have confirmed the vulnerability of urban environments to climate change. In the face of these crises, resilience requires rethinking the morphology of cities: increasing green spaces, de-sealing soils, creating natural ventilation corridors, and developing local climate shelters to protect the elderly and chronically ill.

Social crises constitute a third dimension of urban vulnerability. Riots, mass migration, economic tensions and territorial inequalities can in turn become health crises. Food insecurity in working-class neighbourhoods, energy poverty and lack of access to drinking water in slums reflect the fragility of urban systems that are unable to provide decent living conditions for all their inhabitants. Research shows that disasters disproportionately affect poor populations: they live in more fragile housing, located in flood-prone or polluted areas, and have fewer resources to protect themselves or rebuild. Urban resilience is therefore inseparable from social justice: an unequal city cannot be truly resilient, because part of its population remains permanently exposed to deadly risks.

Contemporary theories of urban resilience emphasise this link between physical infrastructure and social capital. A resilient city is certainly equipped with dykes, secure energy networks and emergency plans, but it is also capable of mobilising community solidarity, citizen participation and institutional trust. Health is a cross-cutting indicator of this resilience. It reflects the quality of air, water and housing, but also social cohesion and the collective capacity to respond to crises. Health indicators, such as premature mortality during heatwaves or hospitalisation rates during a pandemic, thus become markers of the effectiveness of resilience policies.

Several cities around the world illustrate this new approach. Rotterdam has implemented a climate adaptation strategy based on blue and green infrastructure, transforming public squares into water retention basins in the event of extreme rainfall, while creating recreational spaces in normal times. New York, after Hurricane Sandy in 2012, invested heavily in dykes, coastal parks and warning systems to protect vulnerable populations, explicitly integrating health into its resilience plans. Medellín, long marked by violence and inequality, has developed a policy of cable mobility, libraries and neighbourhood parks that have strengthened social cohesion and improved access to essential services. Kigali, Rwanda, has launched an integrated waste management and urban greening programme, reducing diseases linked to poor sanitation and strengthening ecological resilience.

These examples show that health is not a secondary component of resilience policies, but their guiding principle. Preventing deaths during heat waves, limiting the spread of viruses, avoiding air or water poisoning, and ensuring continued access to healthcare and food are all objectives that shape urban action. Resilience can therefore be measured by a city's ability to protect its most vulnerable inhabitants, anticipate crises and integrate health into all its public policies.

Thinking about resilient cities through the prism of health means affirming that protecting life is the very purpose of urban planning. Infrastructure, technology and emergency plans only make sense if they guarantee the survival and well-being of populations in times of crisis. Contemporary cities, faced with converging health, climate and social threats, have no choice but to make health the core of their resilience. Only then can they become sustainable spaces, capable not only of withstanding shocks, but also of transforming and improving themselves through them.

| Proximity as the best form of resilience: *proxilience*

The concept of *proxilience*, introduced by Carlos Moreno at the 12th World Urban Forum held in 2024 (Moreno, 2024b). By combining proximity and resilience, two paradigms that have hitherto been treated separately in urban policies, proxilience offers an integrated approach in which urban adaptability to crises is inseparable from daily access to essential resources. It is based on the conviction that a city's resilience is not only measured in terms of its major infrastructure or strategic plans, but also, and above all, in terms of the continuity of ordinary life at the neighbourhood and individual levels.

Until recently, these two approaches were considered separately: proximity for everyday life, resilience for exceptional circumstances. *Proxilience*, by combining them, marks a decisive conceptual step forward. It posits that true resilience only exists if essential services remain available in the immediate vicinity, even in a crisis situation. A city may have powerful electricity grids, large hospitals and sophisticated logistics centres, but if an entire neighbourhood is left without healthcare, healthy food or climate refuge within walking distance during a pandemic or heatwave, overall resilience is illusory. Proxilience thus places the lived experience of resilience at the heart of urban thinking.

This concept responds directly to les-

sons learned from recent crises. The COVID-19 pandemic showed how vulnerable residents living far from local services were during lockdowns: unable to access fresh food, primary care or green spaces easily. Deadly heatwaves in Europe, India and North America have highlighted that elderly or vulnerable populations, confined to neighbourhoods without trees or climate shelters, suffer dramatically higher mortality rates. Floods in Lagos, Karachi and Miami serve as a reminder that massive infrastructure is not enough if residents do not have safe and accessible shelters in their immediate neighbourhood.

Proxilience therefore presents itself as a normative and operational framework:

- **normative,** because it affirms that equitable access to local resources is a prerequisite for urban justice: every resident, regardless of their neighbourhood, must have access to a healthcare network, healthy food, social spaces and a safe environment, even in times of crisis.
- **operational,** because it offers urban planners a concrete framework for action: identifying essential local resources, ensuring their redundancy, guaranteeing their universal accessibility and developing specific emergency plans at the neighbourhood level.

This link between proximity and resilience has significant strategic implications. It requires us to rethink urban planning not only at the metropolitan level, but also at the micro-local level. It encourages the development of decentralised healthcare networks that can function even when hospitals are overwhelmed. It encourages the creation of more "climate shelters" in libraries, gymnasiums, schools and covered public spaces, so that every neighbourhood has a place to seek refuge from extreme heat. It promotes short food supply chains and local markets, which guarantee nutritional security even in the event of global logistical disruptions. It encourages the creation of green and blue corridors, not only to beautify the city, but also to regulate temperature and water in the face of heatwaves and floods.

Proxilience also challenges urban governance. It requires coordination between health, environmental, social and urban institutions, as well as active citizen participation. Resilience cannot be decreed by institutions alone: it is also built through neighbourhood solidarity, community networks, food cooperatives and collective gardening initiatives. In this sense, proxilience values urban commons as pillars of local resilience.

Theoretically, proxilience is an extension of the "Health in All Policies" and "right to the city" approaches, giving them a temporal and adaptive dimension. It does not merely bring services closer together, it guarantees their sustainability in times of disruption. It thus introduces a new urban grammar in which health and well-being are not only considered in normal times, but also anticipated in times of crisis.

Pandemics and urban planning

The COVID-19 pandemic has demonstrated how the spatial organisation of cities can amplify or mitigate the spread of infectious diseases. Urban density has often been cited as a risk factor, but more detailed research shows that it is not density itself that matters, but how it is organised (Hamidi, Sabouri, & Ewing, 2020). Mixed-use neighbourhoods with well-ventilated public spaces and local services have been more resilient to restrictions, while areas dependent on motorised transport have suffered from disruptions to access to essential services (Sharifi & Khavarian-Garmsir, 2020).

Heatwaves and climate change

Cities are particularly vulnerable to heat waves due to urban heat islands. The 2003 episode in Europe, with its 70,000 additional deaths, tragically illustrates the synergy between urbanisation and climate risks (Robine et al., 2008). IPCC projections (2022) indicate that the frequency and intensity of urban heatwaves will increase, making it essential to adapt urban infrastructure. Strategies include greening, creating ventilation corridors, de-sealing soils and developing "climate refuges" accessible on foot for vulnerable populations (Depietri, Renaud & Kallis, 2012).

Disasters and inequalities

Crises hit disadvantaged populations harder. People living in precarious housing are more exposed to flooding, pollution and critical infrastructure failures (UN-Habitat, 2020). Urban resilience must therefore be thought of as a collective capacity, based on reducing social vulnerabilities. In this sense, health becomes a key indicator of resilience, on a par with energy and mobility.

| One Health and ecological urban planning

Urban health can no longer be understood in an exclusively anthropocentric way. The One Health approach advocates an integrated vision in which human, animal and environmental health are interconnected (Destoumieux-Garzón et al., 2018). This approach is particularly relevant in urban environments, where interactions between humans, domestic animals, wildlife and the environment are intensified.

Prevention of zoonoses

More than 60% of emerging infectious diseases are of animal origin (Jones et al., 2008). Peri-urban deforestation, uncontrolled urbanisation and informal animal markets create risky interfaces for the emergence of new zoonoses. Integrating One Health into urban planning involves preserving ecological corridors, regulating animal trade and improving market sanitation infrastructure.

Urban biodiversity and well-being

Urban ecosystems are not just "decorations": their biodiversity actively contributes to health. The presence of birds, pollinating insects and urban micro-ecosystems strengthens ecological resilience, while also having positive psychological effects on residents (Fuller et al., 2007). Proximity to biodiversity is associated with reduced stress and

improved subjective well-being (Sandifer, Sutton-Grier, & Ward, 2015).

Ecological urban planning

Initiatives such as "sponge cities" in China show how green infrastructure can address hydrological, ecological and health issues. By storing and filtering rainwater, these developments reduce the risk of flooding, improve air quality and promote outdoor activities (Kabisch, 2017). Similarly, the integration of urban farms and green roofs helps to strengthen local food security and create protective microclimates.

| Technologies and data for urban health

Digital technologies offer new levers for integrating health into urban governance.

Environmental sensors

The proliferation of air and noise pollution sensors enables real-time monitoring of population exposure. Citizen science projects such as Luftdaten in Germany show that participatory data collection improves the accuracy of pollution maps and raises awareness among residents (RI-URBANS, 2024).

Big data and urban epidemiology

Analysis of mobility data from mobile phones or transport cards can be used to model the spread of infectious diseases in urban areas (Pei, Kandula, & Shaman, 2020). These tools were used during the COVID-19 pandemic to adjust lockdown policies and target risk areas.

Smart cities and preventive health

Smart cities are developing integrated health monitoring systems. In Barcelona, sensors in public spaces measure air quality and automatically trigger public health alerts (Bakıcı, Almirall, & Wareham, 2013). In Toronto, digital neighbourhood experiments (e.g. Sidewalk Labs) have explored the collection of health data at the local level, but have raised ethical and privacy issues (Kitchin, 2014).

Digital inequalities

While technologies offer opportunities, they also risk widening social divides. The most vulnerable populations are often the least equipped to benefit from digital health. An inclusive approach is therefore essential to prevent innovation from exacerbating existing inequalities (van Dijk, 2020).

Governance and public policies for urban health

| Cities and international networks

Urban health governance is not limited to the national level. Since the 1980s, cities have established themselves as major players in public health policy through transnational networks. This shift marks a profound transformation of the international system: states, long considered solely responsible for the health of their citizens, must now reckon with local authorities capable of cooperating directly with each other, sharing strategies and influencing the global agenda. The city, once seen as merely a territory for the application of national policies, has become a diplomatic actor in its own right, developing a veritable "urban health diplomacy".

Historically, cities have always been hotbeds for the spread of disease and, correspondingly, for the spread of knowledge and practices to combat it. As early as the Renaissance, major trading cities such as Venice and Florence had established cordons sanitaires and exchanged their quarantine methods. But it is only in recent decades that this cooperation has become institutionalised, with the creation of structured transnational networks. In 1986, the World Health Organisation launched the "Healthy Cities" movement, in the wake of the Ottawa Charter on Health Promotion. The aim was to turn cities into laboratories for integrated policies, capable of linking health, the environment, equity and citizen participation. Today, more than 1,500 cities of all sizes participate in this network, exchanging best practices in health-promoting urban planning, combating inequalities and preventing chronic diseases.

The rise of global crises—climate change, pandemics, cross-border pollution—has strengthened the role of these networks. Cities are often the first to be exposed to health and environmental crises, and they must find rapid and concrete solutions, sometimes even before governments have reacted. The SARS pandemic in 2003 and COVID-19 in 2020 have shown that it is municipalities that take the most direct and visible measures, such as closing schools, organising transport, managing food markets, and creating shelters for the homeless. In fact, cities have become the "front line" of global health. It is in this context that networks such as C40, which brings together nearly 100 major cities around the fight against climate change, have integrated health into their priorities, linking emissions reduction, air quality and the well-being of residents.

International city networks do more than just share best practices: they form coalitions capable of influencing global negotiations. ICLEI, the global network of local governments for sustainability, plays a crucial role in climate conferences, advocating for local authorities to have observer status and contribute to the definition of commitments. In the same way, the Eurocities network, which brings together major European cities, has influenced European Union directives on air quality and sustainable mobility by highlighting the health benefits of reducing motorised traffic. These examples show that urban health is now inseparable from multi-level diplomacy, where cities defend their interests and those of their inhabitants on the international stage.

Local experiences shared through these networks are also transforming urban practices. Barcelona has inspired several Latin American cities with its superblock model, which improves air quality and reduces noise. Medellín has shared its experience of social transformation through urban planning with African cities facing violence and exclusion. Paris and Milan, through C40, have launched joint pro-

grammes on sustainable food, implementing municipal policies to reduce meat consumption and promote short supply chains. These horizontal transfers show that cities are no longer just recipients of international standards, but producers of exportable models.

This increased role of cities in health governance is also based on a sense of urgency. People are demanding concrete and visible results, and municipalities, given their proximity to citizens, must respond immediately. Thus, the fight against air pollution became a health priority at the municipal level long before it did at the national level in several countries. The mayors of London, Paris and Madrid have established low-emission zones to protect the health of residents, despite political and economic resistance at the central level. Cities' capacity for experimentation gives them a pioneering role, which can then be taken up and institutionalised by states.

However, transnational governance of urban health also poses challenges. It creates fragmentation of responsibilities, where cities, states and international organisations must coordinate their actions to avoid duplication or contradictions. It raises questions of legitimacy: to what extent can a city engage its population on the international stage without an explicit mandate from a state? Finally, it reveals inequalities between cities in the North and South: while some metropolises have solid resources and networks, others struggle to make their voices heard. The challenge in the coming years will be to broaden these coalitions by integrating more intermediate cities and developing countries, which are home to a growing share of the world's population and health risks.

The assertiveness of cities in international health networks reflects a broader restructuring of global governance. Contemporary crises do not respect national borders and require appropriate local responses. By becoming actors in health diplomacy, cities are gaining unprecedented influence and transformative power. They are no longer limited to managing the consequences of policies decided elsewhere: they are directly involved in defining global priorities. In doing so, they are paving the way for more polycentric governance, where urban health becomes the responsibility not only of states and international organisations, but also of local authorities, in constant interaction through transnational networks.

The WHO Healthy Cities movement

Launched in 1986, the World Health Organisation (WHO) Healthy Cities programme was a decisive step in recognising the local dimension of health (de Leeuw & Simos, 2017). More than 1,500 cities are now participating, sharing strategies on the environment, active mobility, nutrition and mental health. This network highlights the need for cross-sectoral governance, where health becomes a cross-cutting dimension of urban policies.

International networks and decentralised cooperation

Beyond the WHO, several initiatives link urban health to climate and social objectives. C40 Cities, a network of cities committed to combating climate change, includes air quality and health among its priorities (C40 Cities, 2021).

The ICLEI network promotes a "health and sustainability" approach to local authorities. For their part, pioneering cities such as Copenhagen, Barcelona and Medellín are exporting their integrated health models through bilateral cooperation and international forums.

Urban health diplomacy

The proliferation of these networks illustrates the emergence of urban health diplomacy (Acuto & all, 2017). Cities are becoming platforms for experimenting with and disseminating social innovations, sometimes ahead of national governments. They are also at the forefront when it comes to health and climate crises, reinforcing their legitimacy to influence the global agenda.

Integrated local policies

Health in all policies

Urban health governance is based on the principle of "Health in All Policies" (HiAP), which holds that every public decision should be assessed for its impact on health (Kickbusch, 2013). This approach has been adopted by several European cities, which conduct health impact assessments for their urban planning, mobility, and housing projects.

Health-promoting urban planning

Local policies are increasingly incorporating health considerations into urban planning. In Paris, the Territorial Climate-Air-Energy Plan includes measures to reduce air pollutants with measurable health benefits (Mairie de Paris, 2018). In New York, the Active Design Guidelines programme combines urban planning and public health by promoting pedestrian accessibility, open stairways and local green spaces (New York City Department of Health, 2010).

Citizen participation and community health

The legitimacy and effectiveness of urban health policies rely on the participation of residents. Participatory budgeting initiatives in Latin America have helped to fund community health and sanitation projects (Wampler, 2012). In Europe, citizen health councils promote the co-construction of local policies, particularly in disadvantaged neighbourhoods.

Equity and health justice

Urban health governance must aim to reduce inequalities. The city of Toronto has adopted an explicit strategy to reduce health inequalities, identifying 17 priorities including access to housing, food security and social inclusion (Ontario,

2013). This approach illustrates the need to link health with social and environmental policies.

| Towards urban and local health indicators

Measure to govern

The establishment of indicators is essential for steering urban health. The WHO recommends the use of integrated indicators combining epidemiological, environmental and social data (WHO Regional Office for Europe, 2016). These tools make it possible to monitor progress and identify intra-urban inequalities.

Proximity indicators

With the rise of the proximity paradigm, new indicators are emerging. They measure the proportion of the population living within a 15-minute walk of a healthcare centre, green space, school or food market (Moreno et al., 2021). These metrics provide a concrete measure of a city's ability to provide environments conducive to everyday health.

Mapping inequalities

Geographic information systems (GIS) are used to map health disparities in cities (Nykiforuk & Flaman, 2011). These maps highlight the concentration of risk factors (pollution, poverty, low medical density) and guide policies to reduce inequalities.

Towards a comprehensive dashboard

Some cities are developing integrated urban health dashboards. In London, the Urban Health Index combines 20 indicators ranging from air quality to access to healthcare WHO, 2021a). Such initiatives pave the way for the creation of a comprehensive system of urban health indicators that are comparable between cities and aligned with the Sustainable Development Goals (SDGs).

Conclusion and outlook

The analysis conducted in this text has shown that cities are both a risk and a resource for health. Air, noise and heat pollution, sedentary lifestyles and social inequalities exacerbate vulnerabilities, but cities also offer unique levers for action: innovation, local governance and international networks. Far from being a contradiction, this ambivalence expresses the very nature of the urban phenomenon: cities are condensers of opportunities and risks, places where human creativity flourishes, but also where the most acute fragilities are concentrated. It is this constant tension that makes urban health a field of study and strategic action, at the intersection of science, politics and ethics.

The role of cities as a health risk is now well documented. Density and land artificialisation amplify exposure to air and noise pollution. Car dependency and spatial fragmentation promote sedentary lifestyles and chronic diseases. Social inequalities, embedded in urban geography, translate into health gradients that are visible within a few metro or bus stops. Recent crises, whether climatic or health-related, have highlighted the intrinsic vulnerability of cities: heatwaves first strike dense, mineralised centres; pandemics spread rapidly through mobility networks; natural disasters hit precarious and underserved neighbourhoods hardest. The urban environment is thus the scene of a "pathological ecology" that highlights how spatial organisation conditions health.

But cities are also a key health resource. They are home to hospitals, research centres, social services, community organisations and technological innovations. They offer the opportunity to organise active mobility, develop accessible green spaces, implement local food policies and experiment with participatory governance. They offer unique economies of scale for prevention and health promotion. Above all, they are a space for the rapid dissemination of innovations: a pilot project carried out in one neighbourhood can be extended to the whole city, then shared through international networks to inspire other cities. Cities have become hubs for solutions, capable of testing and disseminating sustainable health models.

This dual nature of the city—both problem and solution—requires us to move beyond simplistic visions. Urban health cannot be reduced to the fight against pollution alone, nor can it be seen solely as a testing ground for positive experimentation. It is a dialectic, where each advance opens up new vulnerabilities, and each crisis reveals unexpected resources. The conclusion of this text follows this dialectical logic: we must simultaneously think of the city as a space of risk and as a lever for transformation, in order to sketch out realistic and ambitious perspectives for the future.

Historically, this ambivalence is not new. Medieval cities were both hotbeds of epidemics and places where rudimentary health policies were invented. The industrial cities of the 19th century were hotbeds of disease, pollution and poverty, but they were also the birthplace of hygienism, modern urban planning and the first collective sanitation systems. Today, 21st-century cities are once again the focus of global crises—climate, health, inequality—but they are also at the heart of the solutions: digital innovations, citizen participation, new forms of sustainable urban planning. This back-and-forth between vulnerability and resilience is part of the very nature of urban life.

This is why the perspective of proximity and proxilience appears so central. By bringing residents closer to their essential resources, the city of proximity directly addresses the vulnerabilities created by urban sprawl and car dependency. It reduces pollution, promotes active mobility, improves mental health and strengthens social cohesion. Proxilience, by adding the dimension of resilience to proximity, ensures that these resources will remain accessible even in times of crisis. Together, these paradigms sketch out a vision of the city where health is no

longer an isolated sector, but a cross-cutting common good, protected in normal times as well as in exceptional circumstances.

Cities have unique tools at their disposal to achieve this. Their local governance allows them to act quickly, sometimes ahead of national governments, as demonstrated by low-emission zones and heatwave plans. Their international networks — including WHO Healthy Cities, C40, ICLEI, and Eurocities — provide them with spaces for exchange and cooperation, where they can share their solutions and influence the global agenda. Their capacity for innovation enables them to integrate new technologies — environmental sensors, mobility data, artificial intelligence — to better understand and anticipate health risks. Their proximity to residents provides them with the opportunity to directly involve civil society in the co-creation of policies.

But these assets are not enough if they are not linked to a clear political vision. The conclusion of this analysis emphasises that urban health must become a central indicator of sustainability. It is not just a question of building "smart" or "green" cities, but cities where the health of every resident is protected and promoted. This requires rethinking governance indicators: measuring not only CO_2 emissions or local GDP, but also life expectancy by neighbourhood, access to healthcare, air quality, availability of green spaces and social equity. A sustainable city is first and foremost a healthy city.

The conclusion and outlook must remind us that urban health is a matter of justice. Social inequalities in health are among the most glaring in our societies, and they are reflected in urban spaces: between two neighbourhoods in the same city, the gap in life expectancy can be as much as ten years. Proximity and proxilience offer a response to this injustice: they aim to ensure that, regardless of neighbourhood, every resident has access to the same health conditions, today and tomorrow, in times of stability and in times of crisis.

Today, cities are at a turning point. They can become hotbeds of repeated health crises, or they can transform themselves into laboratories for solutions for health and well-being. The future will depend on their ability to recognise this ambivalence and transform it into a driver of change. Health must become the guiding principle of urban policy, a cross-cutting criterion for evaluation and action. Only then will cities be able to fulfil their historic promise: to be places where human concentration is not synonymous with vulnerability, but with vitality, innovation and solidarity.

| Summary

The first three sections have highlighted the following:

- that the city is a major determinant of health, through polluted environments, the spatial configuration of mobility and the social distribution of risks;
- that proximity – spatial, food, social, environmental – provides an integrative framework for improving everyday urban health;
- that urban sustainability depends on health: resilience to climate and health crises, integration of the One Health approach, and mobilisation of technologies and data for better governance.

The fourth part emphasised that these dynamics are based on multi-level governance, where cities, in cooperation with the WHO and international networks, become actors in global health diplomacy.

| A new urban grammar

The paradigm of proximity is transforming the way we think about health in cities. It breaks with a hospital-centred vision to incorporate prevention and well-being into urban planning, food organisation, the creation of public spaces and citizen participation. This approach resonates with the Sustainable Development Goals, particularly SDG 3 (good health and well-being) and SDG 11 (sustainable cities and communities).

Health thus becomes a cross-cutting indicator of urban quality, on a par with social equity and environmental sustainability. A healthy city is not only a city where hospitals function, but a city where the air is breathable, where active travel is safe, where social ties are nurtured and where ecosystems are respected.

| Outlook

Three areas of focus are emerging for the future:

1. Institutionalise urban health. Cities must set up dedicated services or observatories capable of producing regular indicators and engaging in dialogue with residents.

2. Strengthening resilience. Urban health strategies must anticipate climate and health crises by developing adaptive infrastructure: climate shelters, local healthcare networks, inclusive digital systems.

3. Promoting equity. Reducing social and territorial health inequalities remains a priority. This involves ensuring equitable access to nature, healthcare, healthy food and social spaces.

| A plea for the city-proximity-health

The convergence between cities, health and proximity paves the way for a new approach to urban planning. It places health at the heart of urban justice and ecological transition. In these challenging times, marked by repeated crises, we must remember that health is the most reliable indicator of a society's sustainability.

By incorporating health into all local policies, developing proximity indicators and involving residents in co-construction, cities can become the first line of defence and promotion of global health and well-being.

Bibliografia / Bibliography

Acuto, M., Morissette, M., & Tsouros, A. (2017). City Diplomacy: Towards More Strategic Networking? Learning with WHO Healthy Cities. *Global Policy*, 8(1), 14–24.

Air Quality Life Index (AQLI). (2021). *Annual Update: Ranking of Cities — Health impacts*. Energy Policy Institute at the University of Chicago (EPIC).

Bakıcı, T., Almirall, E., & Wareham, J. (2013). *A Smart City Initiative: The Case of Barcelona. Journal of the Knowledge Economy, 4*(2), 135–148.

Bratman, G. N., Hamilton, J. P., Hahn, K. S., Daily, G. C., & Gross, J. J. (2015). Nature experience reduces rumination and subgenual prefrontal cortex activation. *Proceedings of the National Academy of Sciences, 112*(28), 8567–8572.

C40 Cities. (2021). *Annual Report: Climate Action and Urban Health Benefits*. C40 Cities Climate Leadership Group.

Cheval, S., & al (2024). A systematic review of urban heat island and heat waves research (1991–2022). Climate Risk Management, 44, 100603.

Comber, A., Brunsdon, C., & Radburn, R. (2011). A spatial analysis of variations in health access: linking geography, socio-economic status and access perceptions. *International Journal of Health Geographics, 10*, 44.

Corburn, J. (2017). Urban Place and Health Equity: Critical Issues and Practices. *International Journal of Environmental Research and Public Health, 14*(2), 117.

Cummins, S., Flint, E., & Matthews, S. A. (2014). New neighborhood grocery store increased awareness of food access but did not alter dietary habits or obesity. *Health Affairs, 33*(2), 283–291.

Dahlgren, G., & Whitehead, M. (1991). *Policies and strategies to promote social equity in health*. Institute for Futures Studies.

Depietri, Y., Renaud, F. G., & Kallis, G. (2012). Heat waves and floods in urban areas: A policy-oriented review of ecosystem services. *Sustainability Science, 7*(1), 95–107.

Destoumieux-Garzón, D., Mavingui, P., Boetsch, G., Boissier, J., Darriet, F., Duboz, P., ... & Voituron, Y. (2018). The One Health Concept: 10 Years Old and a Long Road Ahead. *Frontiers in Veterinary Science, 5*, 14.

van Dijk, J. (2020). *The Digital Divide*. Cambridge, UK: Polity Press.

EEA (European Environment Agency). (2020). *European Environment – State and Outlook 2020*.

Eurostat. (2020). *Severe housing deprivation rate by degree of urbanisation*.

FAO (Food and Agriculture Organization). (2018). *Milan Urban Food Policy Pact: Good practices from cities*.

Forsman, A. K., Herberts, C., Nyqvist, F., Wahlbeck, K., & Schierenbeck, I. (2013). Understanding the role of social capital for mental wellbeing among older adults. *Ageing & Society, 33*(5), 804–825.

Frank, L. D., Andresen, M. A., & Schmid, T. L. (2004). Obesity relationships with community design, physical activity, and time spent in cars. *American Journal of Preventive Medicine, 27*(2), 87–96.

Fuller, R. A., Irvine, K. N., Devine-Wright, P., Warren, P. H., & Gaston, K. J. (2007). Psychological benefits of greenspace increase with biodiversity. *Biology Letters, 3*(4), 390–394.

Guagliardo, M. F. (2004). Spatial accessibility of primary care: Concepts, methods and challenges. *International Journal of Health Geographics, 3*(1), 3.

Hamidi, S., Sabouri, S., & Ewing, R. (2020). Does Density Aggravate the COVID-19 Pandemic? Early Findings and Lessons for Planners. *Journal of the American Planning Association, 86*(4), 495–509.

Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social relationships and mortality risk: A meta-analytic review. *PLoS Medicine, 7*(7), e1000316.

IPCC (Intergovernmental Panel on Climate Change). (2022). *Climate Change 2022: Impacts, Adaptation and Vulnerability*. Cambridge University Press.

Jacobs, J. (1961). *The Death and Life of Great American Cities*. Random House.

Jones, K. E., Patel, N. G., Levy, M. A., Storeygard, A., Balk, D., Gittleman, J. L., & Daszak, P. (2008). Global trends in emerging infectious diseases. *Nature, 451*(7181), 990–993.

Kabisch, N., et al. (2017). The health benefits of nature-based solutions to urbanization challenges for children and the elderly – A systematic review. *Environmental Research, 159*, 362–373.

Kabisch, N., Krellenberg, K., & Haase, D. (2017). Green space access in European

cities revisited: The role of spatial scale, and implications for assessments of green space availability, accessibility and policy implementation. *Landscape and Urban Planning, 157*, 56–65.

Kickbusch, I. (2013). Health in All Policies: The evolution. In I. Kickbusch & K. Buckett (Eds.), *Implementing Health in All Policies: Adelaide 2010* (pp. 3–24). Government of South Australia.

Kitchin, R. (2014). The real-time city? Big data and smart urbanism. *GeoJournal, 79*(1), 1–14.

de Leeuw, E., & Simos, J. (Eds.). (2017). *Healthy Cities: The theory, policy, and practice of value-based urban planning*. New York, NY: Springer.

Lefebvre, H. (1968). *Le droit à la ville*. Éditions Anthropos (translated in English: *The Right to the City*).

Mairie de Paris. (2018). *Plan Climat Air Énergie Territorial de Paris. Ville de Paris*.

Marmot, M. (2010). *Fair Society, Healthy Lives: The Marmot Review*. Strategic Review of Health Inequalities in England post-2010. London: The Marmot Review.

Moreno, C., Allam, Z., Chabaud, D., Gall, C., & Pratlong, F. (2021). Introducing the "15-minute city": Sustainability, resilience and place identity in future post-pandemic cities. *Smart Cities, 4*(1), 93–111. https://doi.org/10.3390/smartcities4010006.

Moreno, C. (2024a). *The 15-minute city: A solution to saving our time and our planet*. Wiley.

Moreno, C. (2024b, November 5). *Proxilience: Proximity as Urban and Territorial Resilience* [Keynote address]. 12th World Urban Forum (WUF12), Cairo, Egypt.

New York City Departments of Design and Construction, Health and Mental Hygiene, City Planning, and Transportation. (2010). *Active Design Guidelines: Promoting Physical Activity and Health in Design*. City of New York.

Nykiforuk, C. I. J., & Flaman, L. M. (2009). Geographic Information Systems (GIS) for Health Promotion and Public Health: A Review. *Health Promotion Practice, 12*(1), 63–73. https://doi.org/10.1177/1524839909334624.

Ontario, Ministry of the Environment. (2013). *Air Quality in Ontario 2013 Report*.

Pei, S., Kandula, S., & Shaman, J. (2020). Differential effects of intervention timing on COVID-19 spread in the United States. *Science Advances, 6*(49), eabd6370.

Pope, C. A., & Dockery, D. W. (2006). Health effects of fine particulate air pollution: Lines that connect. *Journal of the Air & Waste Management Association, 56*(6), 709–742.

Popkin, B. M., & Reardon, T. (2018). Obesity and the food system transformation in Latin America. *Obesity Reviews, 19*(8), 1028–1064.

RI-URBANS (2024). *Urban mapping and citizen science guidance document*.

Robine, J.-M., Cheung, S. L. K., Le Roy, S., Van Oyen, H., Griffiths, C., Michel, J.-P., & Herrmann, F. R. (2008). Death toll exceeded 70,000 in Europe during the summer of 2003. *Comptes Rendus Biologies, 331*(2), 171–178.

Rosen, G. (1993). *A History of Public Health*. Johns Hopkins University Press.

Sandifer, P. A., Sutton-Grier, A. E., & Ward, B. P. (2015). Exploring connections among nature, biodiversity, ecosystem services, and human health and well-being: Opportunities to enhance health and biodiversity conservation. *Ecosystem Services, 12*, 1–15.

Sharifi, A., & Khavarian-Garmsir, A. R. (2020). The COVID-19 pandemic: Impacts on cities and major lessons for urban planning, design, and management. *Science of the Total Environment, 749*, 142391.

Stansfeld, S. A., & Matheson, M. P. (2003). Noise pollution: non-auditory effects on health. *British Medical Bulletin, 68*(1), 243–257.

Tan, P. Y., Wang, J., & Sia, A. (2013). Perspectives on five decades of the urban greening of Singapore. *Cities, 32*, 24–32.

Twohig-Bennett, C., & Jones, A. (2018). The health benefits of the great outdoors: A systematic review and meta-analysis of greenspace exposure and health outcomes. *Environmental Research, 166*, 628–637.

United Nations. (2019). *World Urbanization Prospects: The 2018 Revision*. United Nations, Department of Economic and Social Affairs.

UN-Habitat. (2020). *World Cities Report 2020: The Value of Sustainable Urbanization*.

UNICEF, World Health Organization, & World Bank. (2023). *Levels and trends in child malnutrition: UNICEF/WHO/World Bank Group joint child malnutrition estimates: Key findings of the 2023 edition*.

Walker, R. E., Keane, C. R., & Burke, J. G. (2010). Disparities and access to healthy food in the United States: A review of food deserts literature. *Health & Place, 16*(5), 876–884.

Wampler, B. (2012). Participatory budgeting: Core principles and key impacts. *Journal of Public Deliberation, 8*(2), Article 12.

World Bank & Institute for Health Metrics and Evaluation. (2016). *The cost of air pollution: Strengthening the economic case for action*. Washington, DC: World Bank.

World Health Organization. (2010). *Global recommendations on physical activity for health*. Geneva: World Health Organization.

World Health Organization. (2016). *Urban green spaces and health: A review of evidence*. WHO Regional Office for Europe.

World Health Organization. (2021a). *WHO global air quality guidelines: Particulate matter (PM2.5 and PM10), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide*. Geneva: World Health Organization.

World Health Organization. (2021b). *Obesity and overweight*. Fact sheet. Geneva: World Health Organization.

World Health Organization. (2022). *Air Pollution and Health Briefing*. Geneva: World Health Organisation.

OHJ 09

IZS
TERAMO

ISSN 2975-0814