

The Hidden Health Cost of Urbanisation: Are Our Cities Becoming Hotspots for Zoonotic Diseases?

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ABSTRACT

Rapid urban growth is changing how humans interact with animals and the environment. Recent studies show that cities and their edges can concentrate pathogens that jump from animals to people, especially in soils, parks, and transition zones between wild and built areas. This article explains how urbanisation can increase zoonotic disease risk and how a One Health approach can help cities grow safely.

INTRODUCTION:

Cities offer jobs, education, and healthcare, but as they expand, natural habitats shrink and land use changes dramatically. These changes affect not only the landscape but also how diseases move between animals and humans.

Zoonotic diseases are infections that spread between animals and people, such as rabies, dengue, leptospirosis, and viruses like avian influenza and SARS-CoV-2. Around 60% of

known human infectious diseases are zoonotic, and about 75% of emerging infections originate in animals (Ortiz-Millán *et al.*, 2025). The question is how urban design and land use might be turning some cities into hotspots for these diseases.

How Urbanisation Changes Disease Risk- Urbanisation affects zoonotic disease risk through several pathways.

Habitat loss and the wildland–urban interface

When cities expand, wildlife is pushed into smaller patches of land next to homes and farms. The zone where human settlements meet wildlands is called the **wildland–urban interface (WUI)**, a critical hotspot for human–wildlife interactions and potential disease spillover (Simkin, 2025; Diuk-Wasser, 2026). Research shows that about 20% of people living in WUI zones reside in areas with particularly high zoonotic potential (MacDonald *et al.*, 2026).

Urban soils as hidden reservoirs

A large study across 13 Chinese cities found that **urban soils** contain higher diversity and abundance of bacterial zoonotic pathogens compared with peri-urban soils (Zhang *et al.*, 2025). Species such as *Klebsiella pneumoniae* were notably enriched in urban soils, and pathogen communities were more similar across different cities (Zhang *et al.*, 2025; ScienMag, 2025).

Microbial exchange in urban parks

Research in urban park ecosystems identified **189 potential zoonotic pathogens** shared among different habitats (soil, water, plants, air), with the plant leaf surface acting as a central node for microbial exchange (Liu *et al.*, 2025). This suggests that everyday green spaces can act as networks for pathogen movement.

Vectors, waste, and dense human networks

Urban areas often struggle with waste management and standing water, creating breeding sites for mosquitoes and rodents that transmit diseases like dengue, Zika, and leptospirosis (Zhang *et al.*, 2025; IntechOpen, 2026). High population density means that once a pathogen spills over from an animal, it can spread quickly through human networks.

A One Health Approach for Safer Cities

A **One Health** framework recognises that human health is connected to animal and ecosystem health. For cities, this means:

1. **Map and manage the WUI** – Limit high-density housing in sensitive areas and create buffer zones (Diuk-Wasser, 2026).
2. **Upgrade sanitation and waste systems** – Reduce breeding sites for mosquitoes and rodents (Zhang *et al.*, 2025).
3. **Design green infrastructure carefully** – Avoid creating new tick or mosquito habitats near homes (Liu *et al.*, 2025).
4. **Monitor pathogens in urban environments** – Test urban soils and park ecosystems for early warnings (Zhang *et al.*, 2025).

CONCLUSION

Urbanisation is not inherently bad for health, but without careful planning, the same forces that make cities dynamic can also make them efficient incubators for zoonotic diseases. Recognising this hidden health cost and treating cities as One Health systems can help us enjoy urban life without turning our cities into breeding grounds for the next pandemic.

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