Urban environments in 14 cities worldwide are related to physical activity

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BACKGROUND

- Physical inactivity is a **global pandemic** responsible for over **5 million deaths** annually through its effects on multiple non-communicable diseases
- Those who live in **neighbourhoods** that are **densely populated**, have **interconnected streets**, and are close to **shops, services, restaurants, public transport, and parks** tend to be **more physically active** than those in less walkable neighbourhoods.
- **Design of urban environments** has the potential to contribute nearly **90 min/week** of physical activity, which is **60% of the 150 min/week** recommended in physical activity guidelines.

RESEARCH QUESTION

How do objectively measured features of the urban environment relate to physical activity in an international sample of adults?

METHODS

Data from the IPEN Adult Study

6,822 adults aged between 18-66yrs was used in the study

Participants were sampled from neighbourhoods with varied levels of **walkability** and **socio-economic status**:

26% of participants	25% of participants	27% of participants	22% of participants

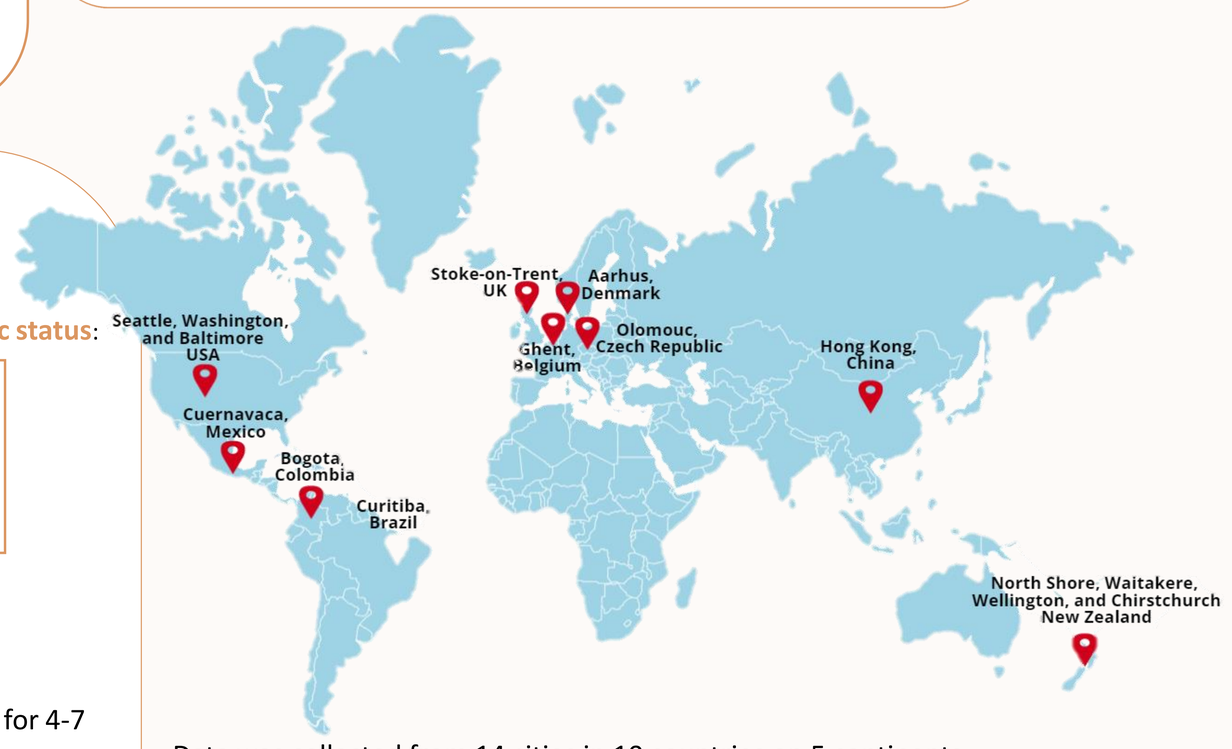
Environment Exposures:

~ Street network buffers around residential address: 1km and 0.5km ~

- Net residential density (1000 dwellings/km^2)
- Street intersection density (100 intersections/km^2)
- Retail and civic land use ratio to buffer area
- Public transport density (10 transport points/km^2)
- Distance to nearest transport stop/station
- Public park density (10 parks/km^2)

Outcomes:

- Physical activity-measured with an accelerometer placed around the waist for 4-7 days, ≥10 hours of wear time/day



Data was collected from 14 cities in 10 countries on 5 continents.

RESULTS

Four environmental exposures were associated with a **positive linear increase** of **physical activity**

Park density (0.5km buffer)	Net residential density (1km buffer)	Public transport density (1km buffer)	Intersection density (1km buffer)
exp(b) = 1.146; 95% CI 1.033-1.272; p=0.010	exp(b) = 1.006; 95% CI 1.003-1.009; p=0.0061	exp(b) = 1.030; 95% CI 1.018-1.056; p=0.0007	exp(b) = 1.069; 95% CI 1.011-1.130; p=0.019

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Moderate-to-vigorous physical activity

- Adults who lived in the **most activity-friendly neighbourhoods** did **68–89 min more of physical activity per week** than those in the **least activity-friendly neighborhoods.** This represents **45-59% of the recommended 150min/week of physical activity**
- **Combinations of environmental features** generally **explained more variation in physical activity than single features**, suggesting that a **comprehensive approach** is needed to design activity supportive neighborhoods.
- There was **strong similarities of associations** between built environment and physical activity **across countries** diverse in income, culture, and activity supportiveness. Therefore, these results can be generalized across countries.

IMPACT

- **Urban environment design** can potentially contribute to nearly **90min/week** of physical activity, **60%** of the 150 min/week recommended in physical activity guidelines!
- Effects of built environments were reported to apply similarly across ten diverse countries, indicating that urban design should be a **globally relevant** public health priority
- Increasing **residential density**, providing good **transport service**, and ensuring **access to parks** would be expected to substantially **increase physical activity** in the population on a **permanent basis** and contribute to meeting the United Nations goals to reduce non-communicable diseases

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