

FROM EVIDENCE TO PRACTICE; FACILITATORS AND BARRIERS

Mark Nieuwenhuijsen and Sarah Egan

ISGlobal
Barcelona Institute for Global Health

UBD POLICY
THE URBAN BURDEN OF DISEASE ESTIMATION FOR POLICY MAKING

EXCELENCIA SEVERO OCHOA

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Low emission zones

London's low emission zone is working – so why are cities around the world so cautious about clean air?





Fiona Harvey *Environment editor*

Sun 23 Aug 2026 09.00 CEST

Share

Holistic and systems-based approach



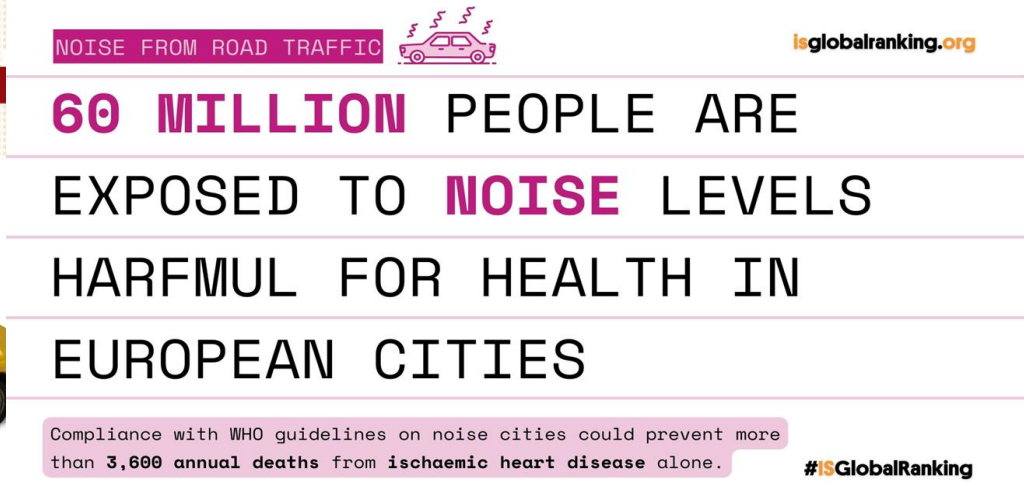
Nieuwenhuijsen 2021

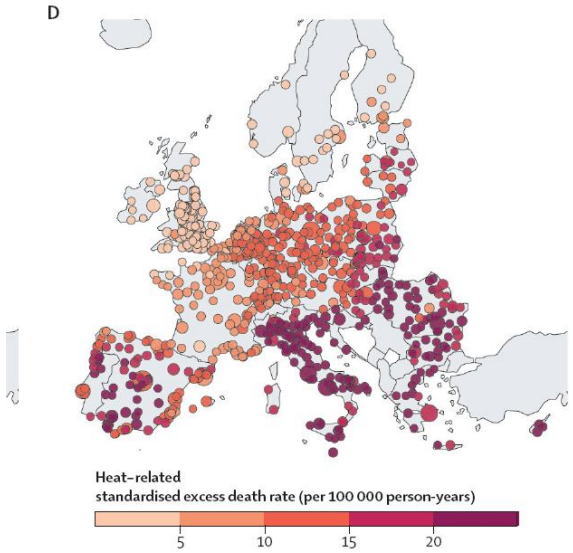
Burden of disease estimates from nearly 1000 cities in Europe





Khomenko et al., 2021 (https://doi.org/10.1016/S2542-5196(20)30272-2)
Barboza et al., 2021 (https://doi.org/10.1016/S2542-5196(21)00229-1)





Masselot et al 2023
Khomenko et al., 2022 (https://doi.org/10.1016/j.envint.2022.107160)



2904 premature deaths (20%) annually in Barcelona due to **suboptimal urban and transport planning**

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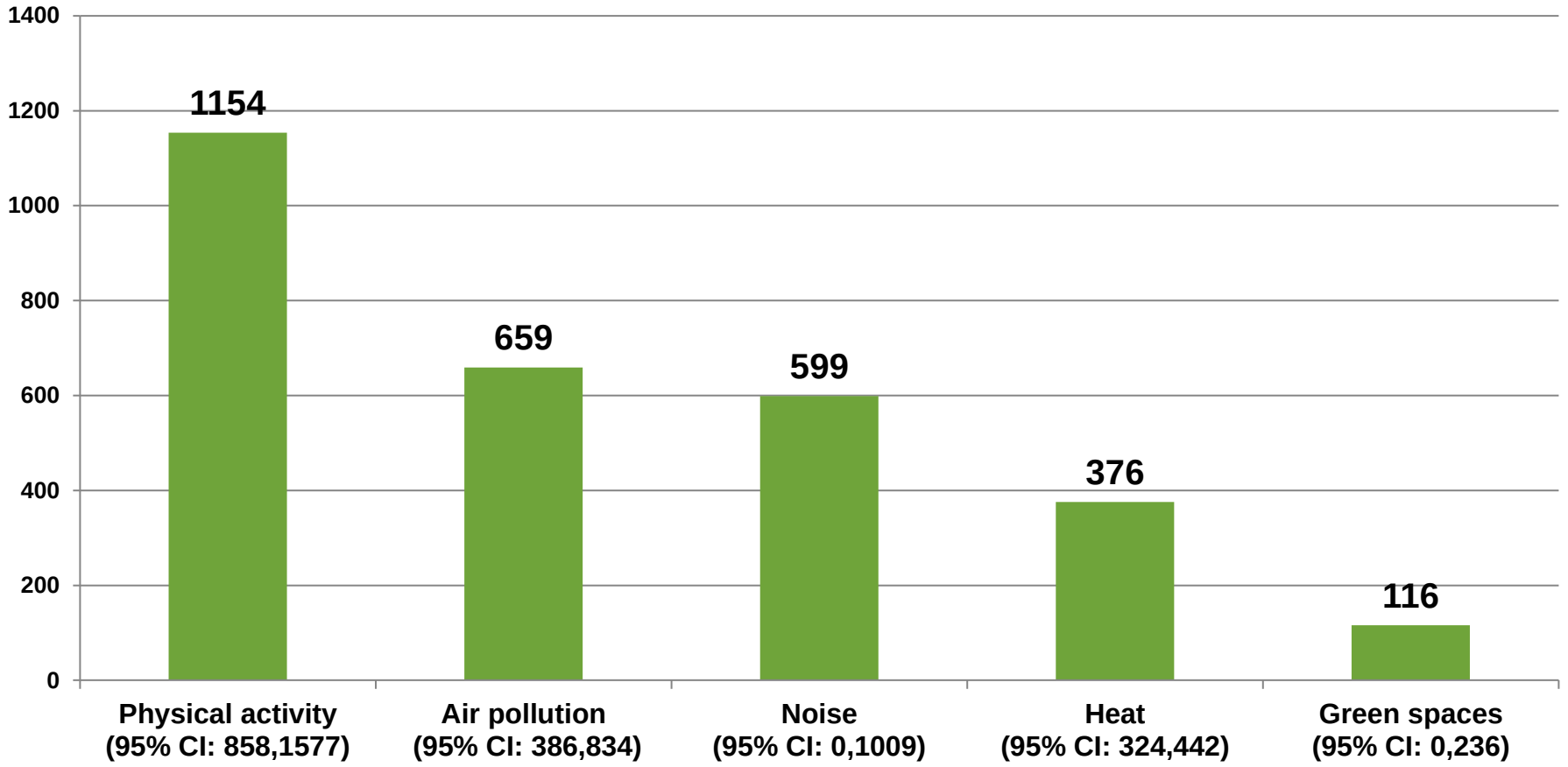


Calle Aragón/carrer Aragó

Mueller et al EHP 2017; 125: 89-96

Deaths due to poor urban and transport planning in Barcelona

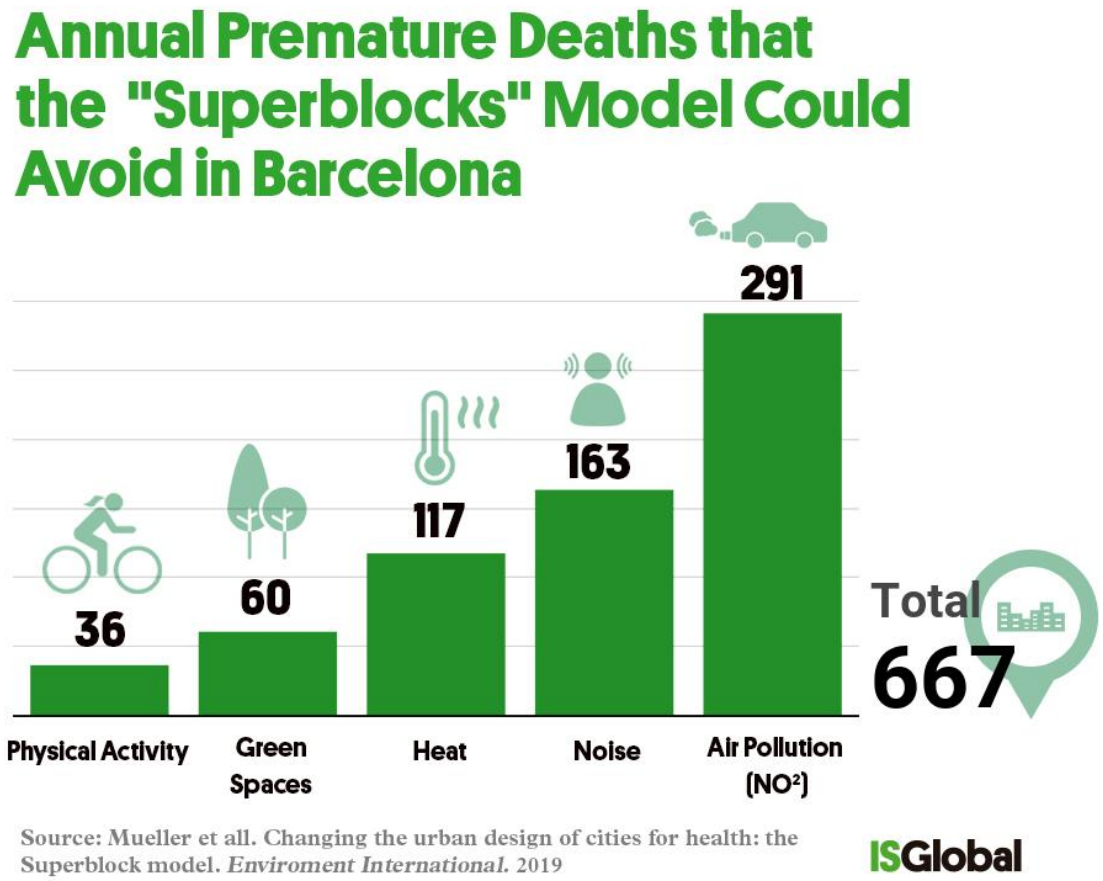
2904 premature **deaths** (95% CI: 1568, 4098) (→ **almost 20% of mortality**)

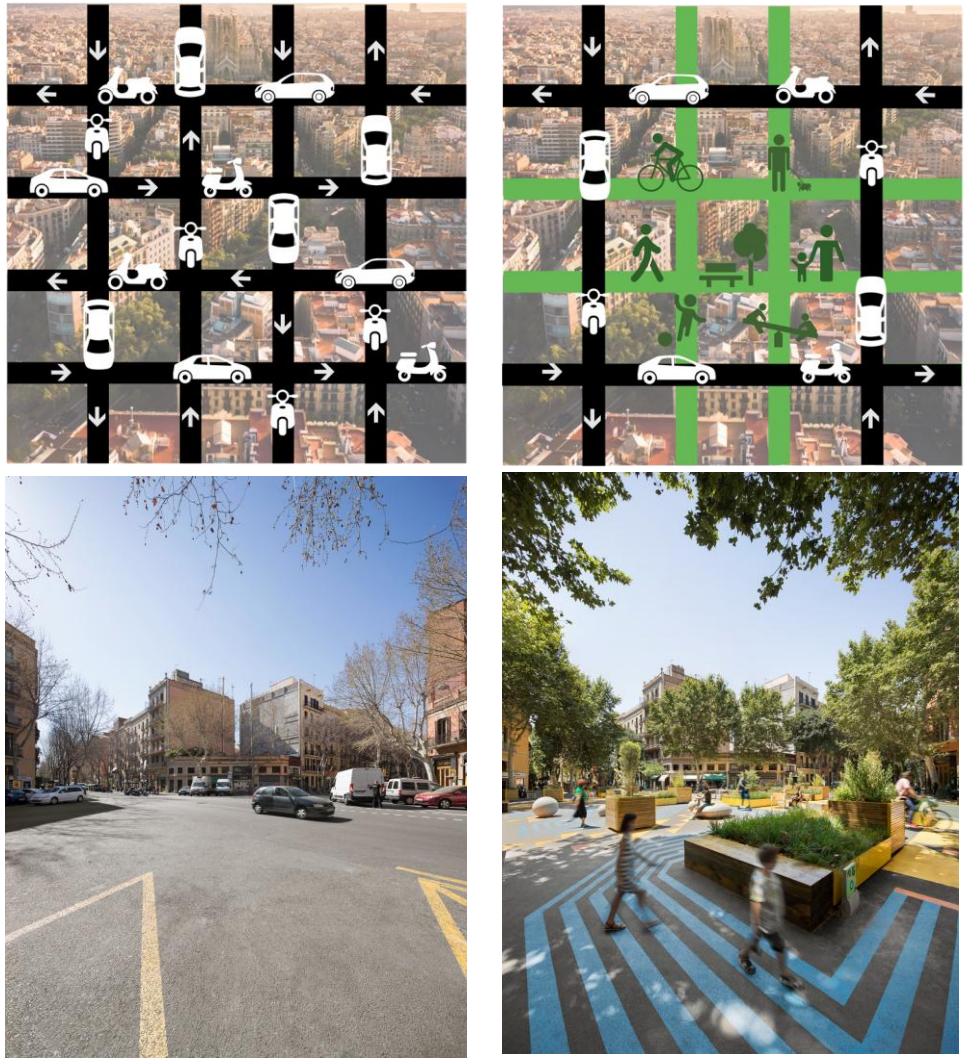


30 traffic injury deaths

Highlights the potential for well-planned and sustainable urban design that gets people moving (e.g. walking and cycling) → car-dependent urban design has quietly taken away from us

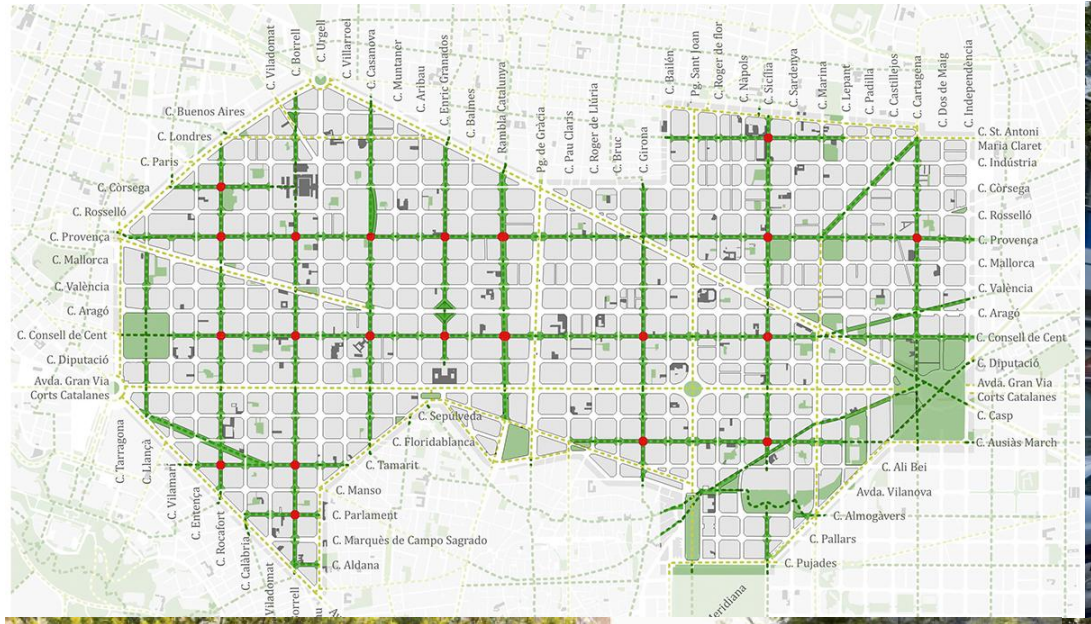
Barcelona Superblocks





- 19.2% car reduction, 24.3% reduction in NO2, 2.9 dB noise reduction
- 3 fold increase green space (6.5% to 19.6%), 20% Surface temperature reduction

Green corridors (Ejes Verdes / Eixos Verds)









Green corridors (Ejes Verdes / Eixos Verds)

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Environment International 196 (2025) 109313

Contents lists available at ScienceDirect

Environment International

journal homepage: www.elsevier.com/locate/envint

Full length article

Co-benefits of nature-based solutions: A health impact assessment of the Barcelona Green Corridor (*Eixos Verds)* plan

Tamara Iungman[a,b,c], Sergi Ventura Caballé[d], Ricard Segura-Barrero[d], Marta Cirach[a] Natalie Mueller[a,b,c], Carolyn Daher[a,b,c], Gara Villalba[d,e], Evelise Pereira Barboza[a,b] Mark Nieuwenhuijsen[a,b,c,*]

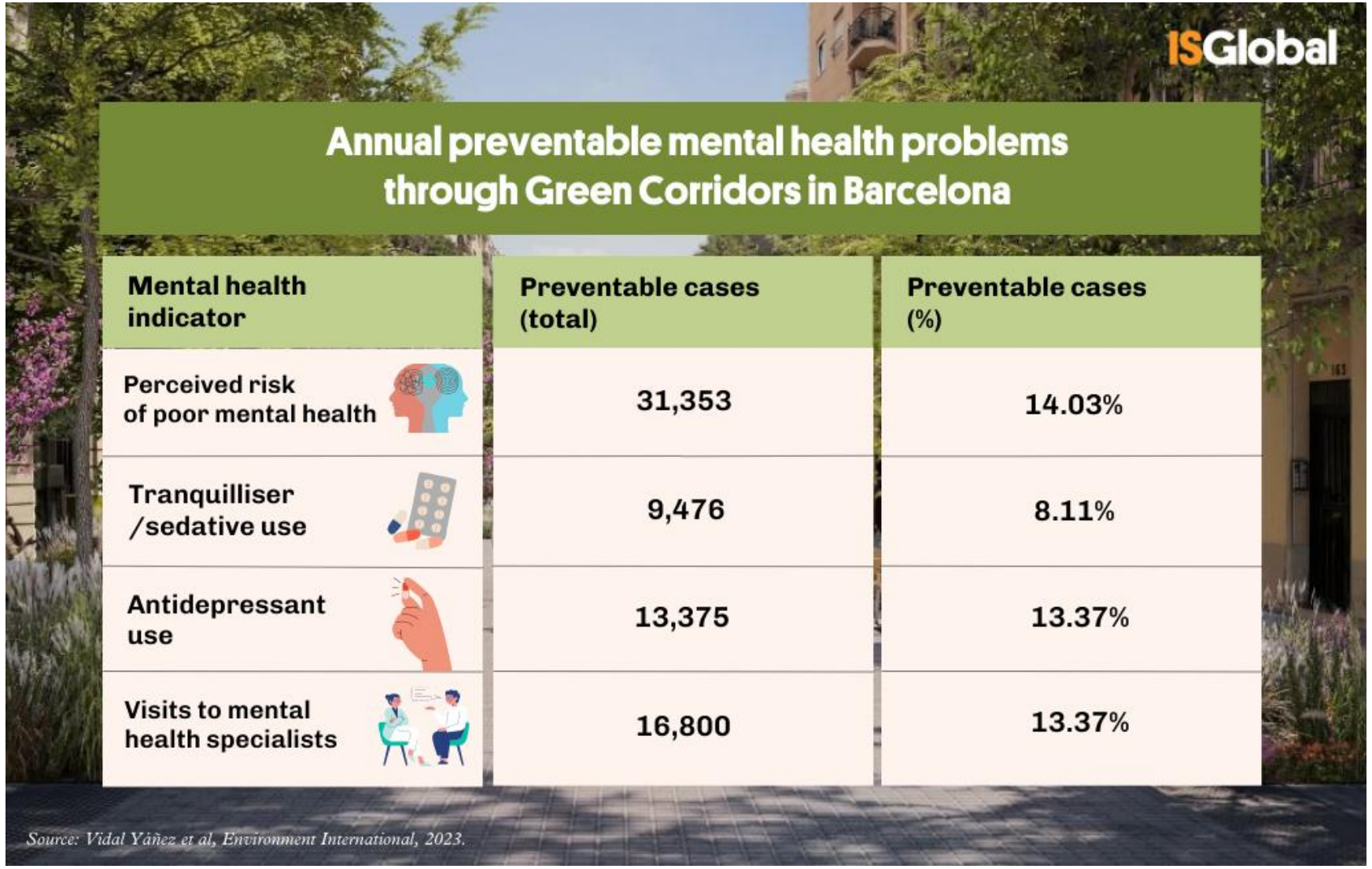
Which version of a policy that is implemented matters

Ambition has a measurable payoff

Exposure	Baseline scenario	Counterfactual scenario	Preventable deaths (95 % CI)
Green Corridors plan full implementation			
Greenness (NDVI)	Mean 0.267 (IQR: 0.224 – 0.301)	Mean 0.286 (IQR: 0.256 – 0.304)	178 (95 % CI: 116–247) annually
Temperature	Mean reduction: 0.05 °C (IQR: 0.01 °C – 0.07 °C) Maximum reduction: 0.42 °C		5 (95 % CI: 4–6) monthly
Urban Master Plan (PDUM) 2030			
Greenness (NDVI)	Mean 0.267 (IQR: 0.224 – 0.301)	Mean 0.279 (IQR: 0.233 – 0.304)	53 (95 % CI: 21–93) annually
Temperature	Mean reduction: 0.03 °C (IQR: 0 °C – 0.06 °C) Maximum reduction: 0.77 °C		3 (95 % CI: 2–4) monthly

Green corridors (Ejes Verdes / Eixos Verds)

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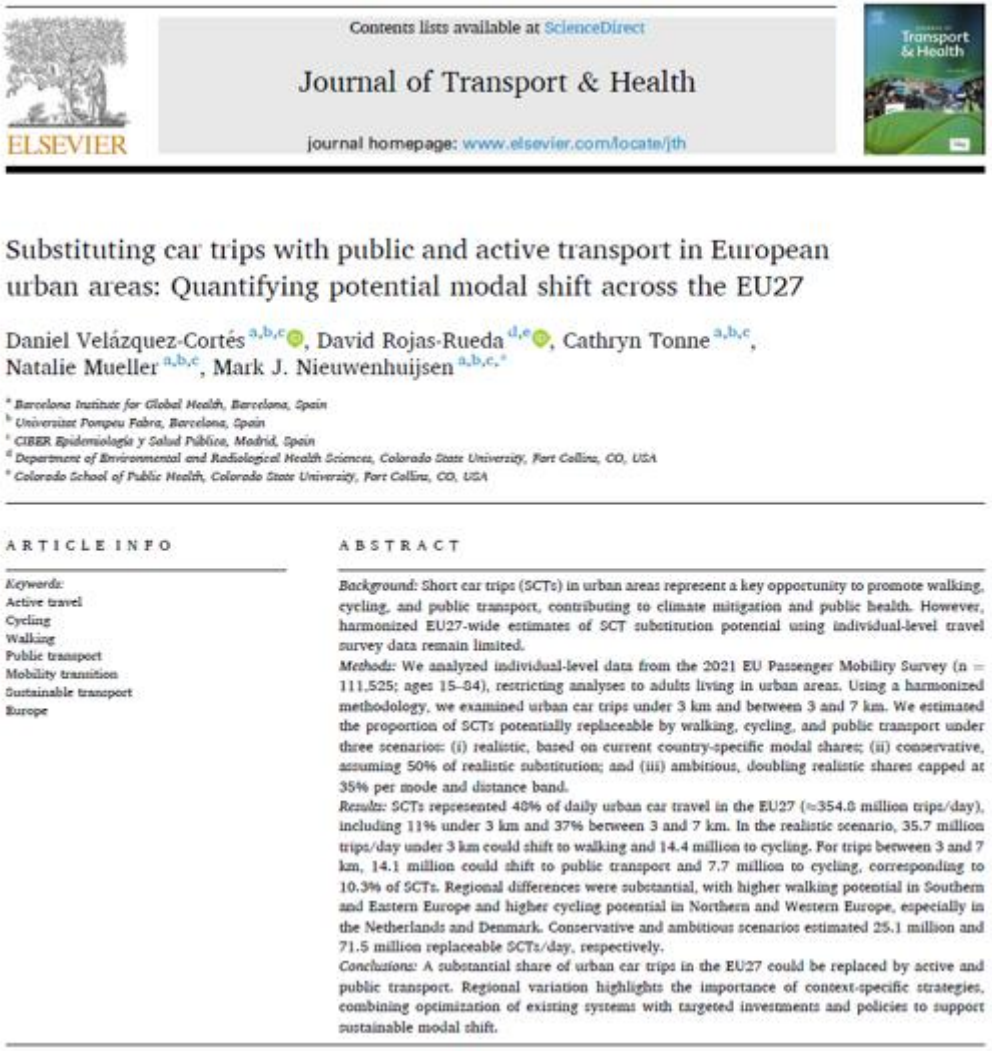
Substituting car trips with active transport



20-30% of people's income for running a car

48% of car trips < 7 km

Substituting car trips with active transport



Contents lists available at ScienceDirect

Journal of Transport & Health

journal homepage: www.elsevier.com/locate/jth

Substituting car trips with public and active transport in European urban areas: Quantifying potential modal shift across the EU27

Daniel Velázquez-Cortés [a,b,c], David Rojas-Rueda [d,e], Cathryn Tonne [a,b,c], Natalie Mueller [a,b,c], Mark J. Nieuwenhuijsen [a,b,c,*]

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ARTICLE INFO

Keywords:
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Mobility transition
Sustainable transport
Europe

ABSTRACT

Background: Short car trips (SCTs) in urban areas represent a key opportunity to promote walking, cycling, and public transport, contributing to climate mitigation and public health. However, harmonized EU27-wide estimates of SCT substitution potential using individual-level travel survey data remain limited.

Methods: We analyzed individual-level data from the 2021 EU Passenger Mobility Survey (n = 111,525; ages 15–84), restricting analyses to adults living in urban areas. Using a harmonized methodology, we examined urban car trips under 3 km and between 3 and 7 km. We estimated the proportion of SCTs potentially replaceable by walking, cycling, and public transport under three scenarios: (i) realistic, based on current country-specific modal shares; (ii) conservative, assuming 50% of realistic substitution; and (iii) ambitious, doubling realistic shares capped at 35% per mode and distance band.

Results: SCTs represented 40% of daily urban car travel in the EU27 (≈354.6 million trips/day), including 11% under 3 km and 37% between 3 and 7 km. In the realistic scenario, 35.7 million trips/day under 3 km could shift to walking and 14.4 million to cycling. For trips between 3 and 7 km, 14.1 million could shift to public transport and 7.7 million to cycling, corresponding to 10.3% of SCTs. Regional differences were substantial, with higher walking potential in Southern and Eastern Europe and higher cycling potential in Northern and Western Europe, especially in the Netherlands and Denmark. Conservative and ambitious scenarios estimated 25.1 million and 71.5 million replaceable SCTs/day, respectively.

Conclusions: A substantial share of urban car trips in the EU27 could be replaced by active and public transport. Regional variation highlights the importance of context-specific strategies, combining optimization of existing systems with targeted investments and policies to support sustainable modal shift.

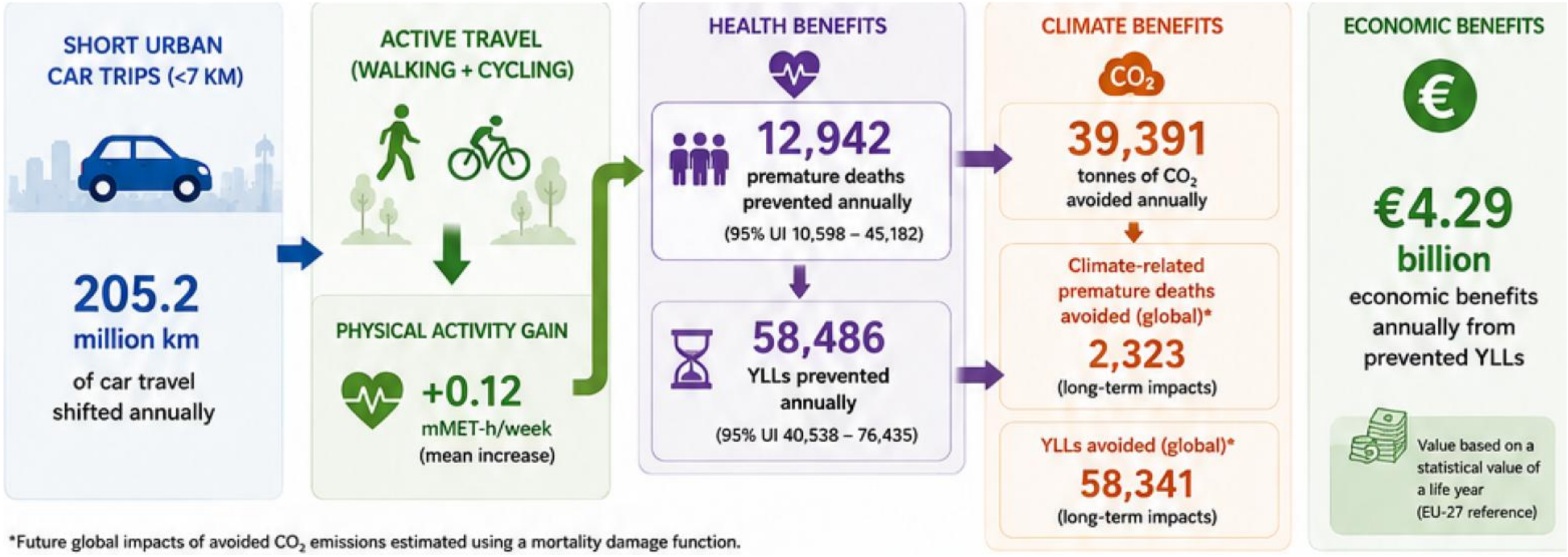
- Harmonised data from the 2021 EU Passenger Mobility Survey
- Modelled three scenarios: realistic, conservative, and ambitious

Short car trips make up 48% of all daily urban car travel across the EU27

A substantial share is replaceable

Varied by region → Urban design and infrastructure is a key driver of how feasible substitution is

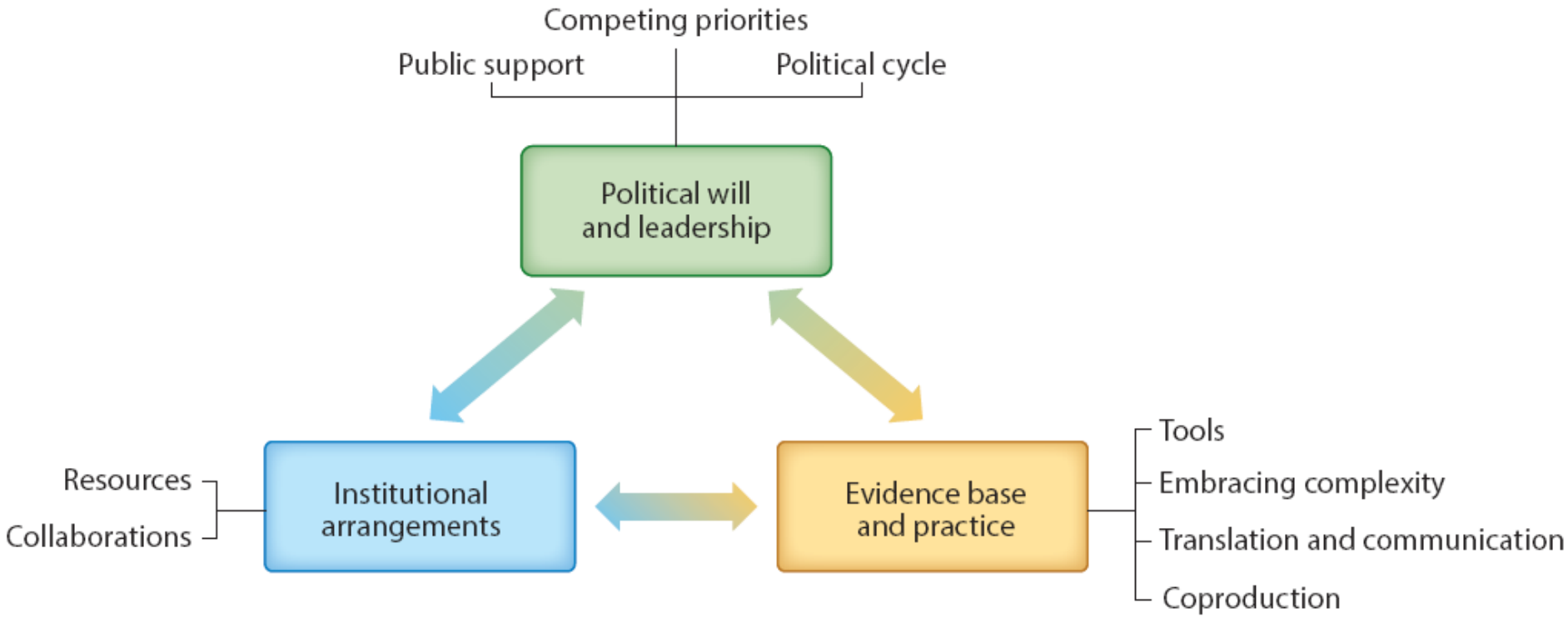
Substituting car trips with active transport



Velázquez-Cortés et al in prep

Shows the impact of what's feasibly achievable if we act on the recommendations and the evidence that we have

Despite all of this evidence, why inaction?



Negev et al 2022

- Struggles for power and influence
- Resistance of vested interest and lobbying
- Short-term election cycles

→ Long term transitional policy making challenging and burn political capital

Different traditions and goals

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Urban planning

- Theoretical
- Case based
- Economic growth
- Zoning
- Aesthetics, sustainability, equity

Public health

- Evidence based
- Relies on statistical literacy
- Complex risks (populations)
- Robust
- Lack of implementation knowledge (e.g. green)

Mobility / transport planning

- Engineering / reactive
- Car centric
- Fast and efficient / travel time saving
- Safety

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Why implementation lags: the recurring barriers

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Timing mismatch

Research cycles rarely align with elections, budgets, and policy windows
→ by the time evidence ready, window often closed.

Fragmented governance

Siloed departments
Differing sectoral priorities
→ coordinated action hard to sustain.

Short funding cycles

Limited, uncertain resourcing undermines follow-through.

In both research institutions and public administrations

Communication gaps

Technical jargon
Low data literacy
→ decision-relevant findings do not get used

Low trust

Weak, one-off relationships between researchers and policymakers
→ slows evidence uptake

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How can we close the gap

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Co-produced evidence

Research questions defined together with policymakers, practitioners and communities from the outset

Trusted relationships

Long-term, trust-based collaboration between researchers and decision-makers

Knowledge brokers

Networks and organisations that translate evidence into decision-relevant formats

Structured decision-making

A shared process
→ turns stakeholder priorities into monitored actions

Sustained funding & ownership

Continuity of knowledge-translation efforts, not one-off projects, sustains impact over time

Cross-disciplinary education

Education in each other's evidence, methods and priorities
→ built into the curricula of urban planning, public health and policy making

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Knowledge brokers: the link between research and policy

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Knowledge brokers translate evidence into usable form and feed policy priorities back to researchers

Examples include:

C40 Cities

Healthy Neighbourhoods Explorer — planning tool live in 1,114 cities

POLIS Network

Healthy Lifestyles for Europe project (HL4EU) - Cross-sectoral active-mobility promotion work across European cities

World Resources Institute

Cool Cities Lab –platform using fine-scale data to develop heat plans and cooling projects

ICLEI

Global network of 2,500+ municipalities influencing sustainable policy change through peer exchange, partnerships and capacity building

Limitations

Short funding cycles

Siloed working practices

Over-reliance on a small number of highly engaged organisations

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Cross-sector collaboration to bridge the gap from science to practice

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Researchers

Co-produce evidence; offer options, not one answer; align with political timelines.

Governments

Institutionalise science–policy roles; fund translation, not just research; use SDM to prioritise.

Knowledge brokers

Build long-term trust; keep tools practical and usable at city scale; broaden who's involved.

Citizens & NGOs

Make invisible risks tangible; partner with health professionals; sustain positive engagement.

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Multisectorial approach

- A multisectoral problem needs a multisectoral solution
- Health has a role as both an input and an outcome of development
- The health of people living in cities is affected by decisions made in all sectors
- Healthy people are critical to social and economic development



Courtesy of Jo Ivey Boufford

Pollutionwatch
Cities

Why health and wellbeing should be at centre of urban planning

Scientists are examining how building and use of infrastructure relates to the burden of illness

Gary Fuller

@drgaryfuller

Fri 20 Oct 2023 07.00 CEST



Children and parent volunteers ride bicycles to school on car-free streets in Barcelona, Spain.

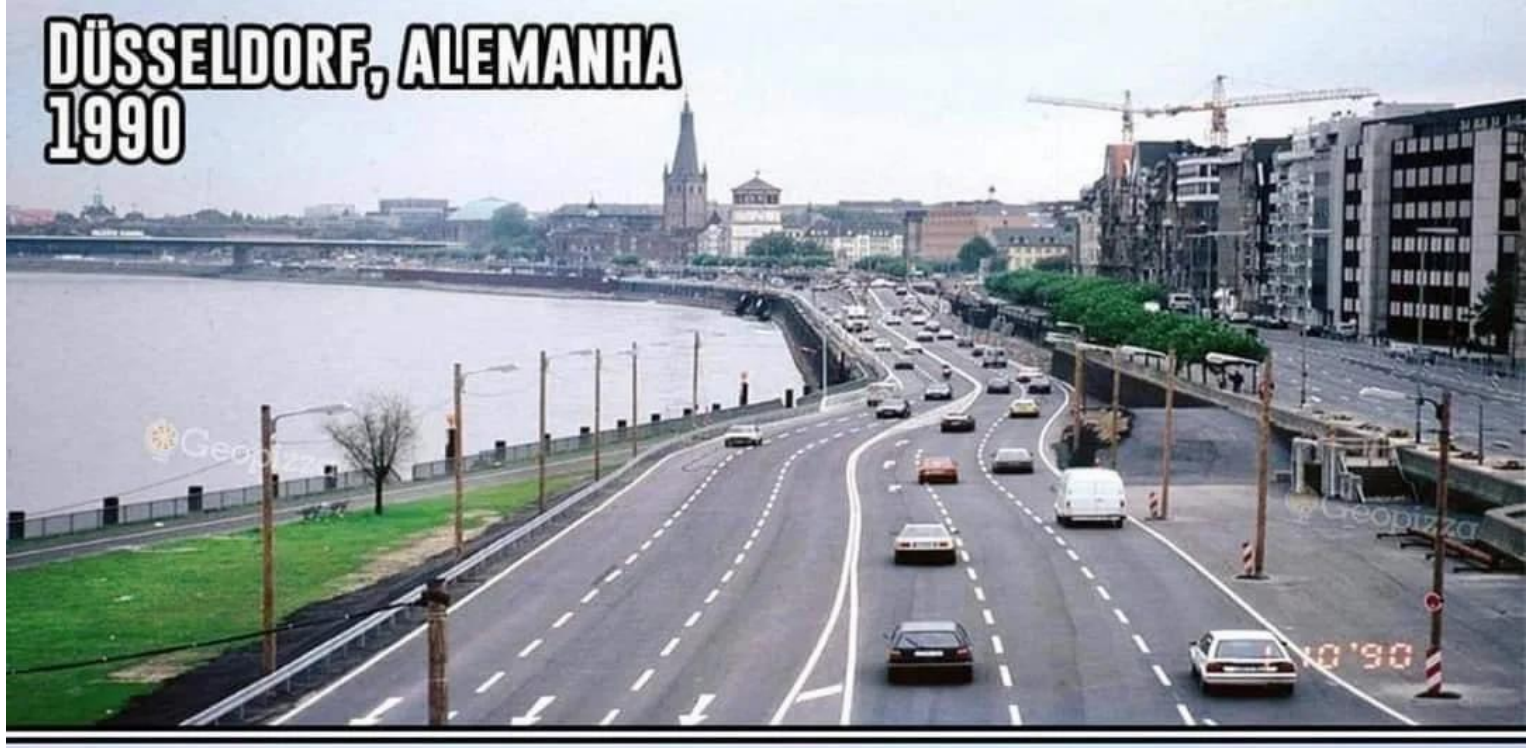
"Often the **problem is the absence of a shared vision** of a better city, no clear rational such as better respiratory health, and pathways to get there. Too often citizens think that restrictions and costs are imposed by a city council to pester them. We **need more co-creation and engagement** to **create and implement a vision of a sustainable, livable and healthy city**."

Mark Nieuwenhuijsen

https://www.theguardian.com/environment/2023/oct/20/why-health-wellbeing-should-centre-urban-planning



Seoul, Korea


DÜSSELDORF, ALEMANHA
1990
10'90


2019





Amsterdam, The Netherlands









Glòries in Barcelona, Spain



Glòries today



The Lancet International Health Lecture:
https://www.youtube.com/watch?v=6TeUSV-Q-w4

https://www.linkedin.com/in/mark-nieuwenhuijsen-a07239354/



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