Politique publique, environnement et santé

Mauricio Avendano
Université de Lausanne
Unisanté

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Lausanne - Bern

Train

1h 6m

SFr 35 - SFr 65

CHEAPEST

Bus

2h 5m

SFr 4 - SFr 10

Rideshare

1h 31m

SFr 6

Drive

1h 9m

SFr 20 - SFr 29

- Are policies that are good for the environment also good for our health ('win-win')?

- Are there policy tradeoffs between health and environmental outcomes?

Introduction

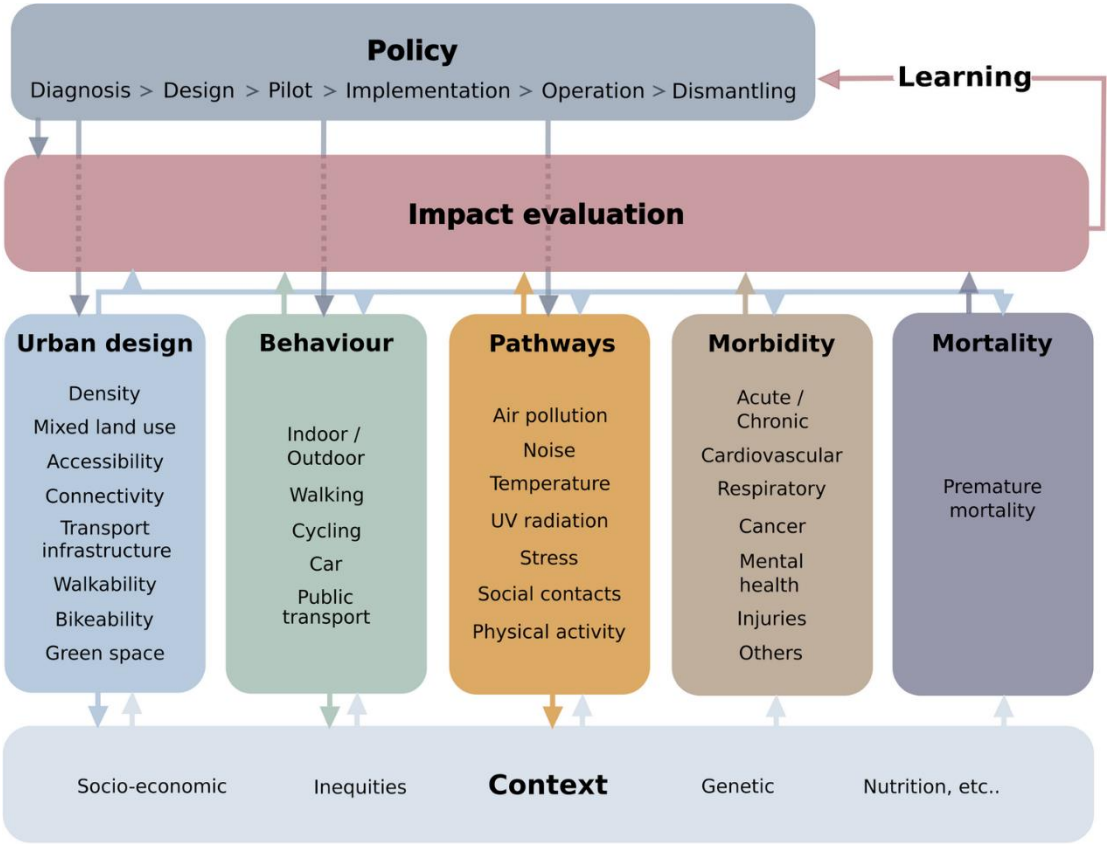
- Strong evidence that the natural, physical and social environments are linked to physical and mental health outcomes
- Environmental factors are amenable to policy: Economic, social, urban, land use and related policies (Cole & Fielding, 2007; Benavides et al 2022)
- Yet, there is limited evidence of how public policies that aim to change the environment ultimately impact health outcomes

Environmental policy & health

- Common assumption that policies impact both environmental and health outcomes, but:
  - Demonstrating health effects is challenging
  - Policies effective to improve environmental outcomes may not be equally effective to improve health outcomes

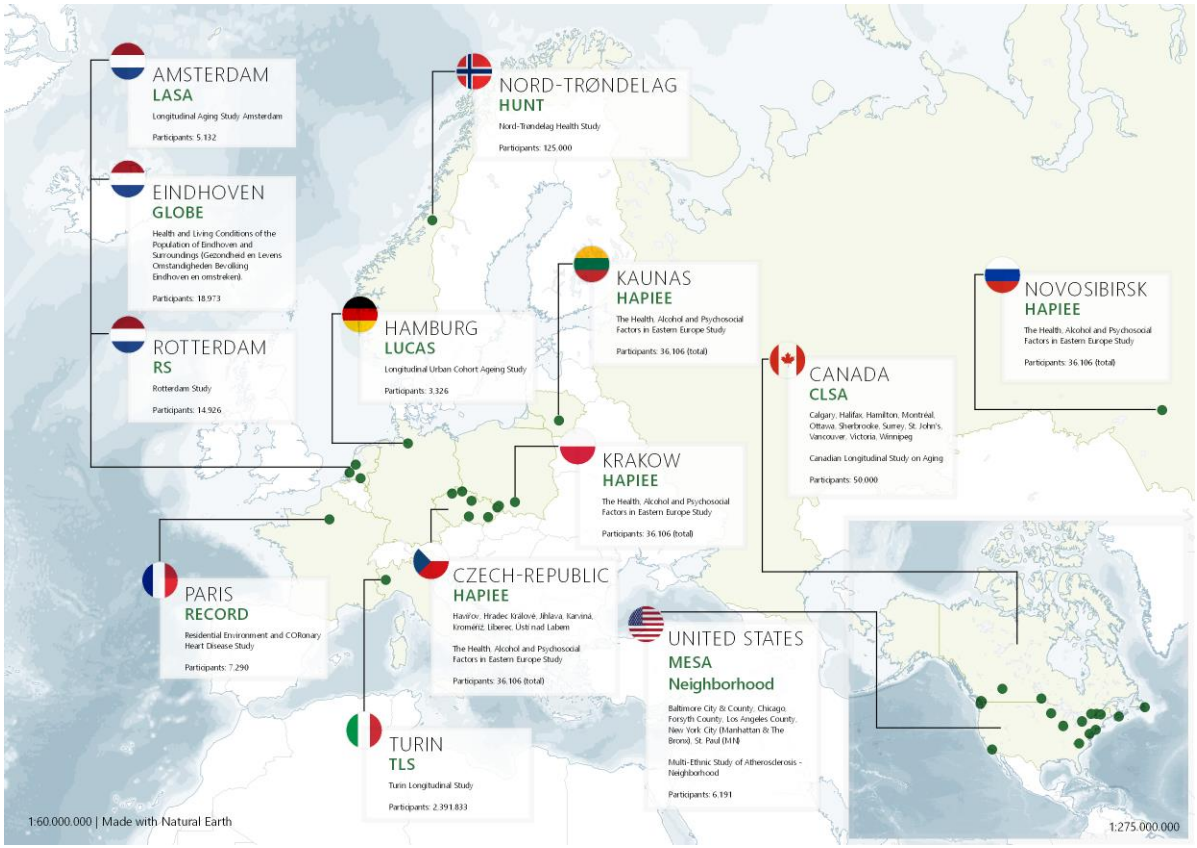
- Mechanisms are complex:
  - Direct effects by changing targeted environmental outcomes (e.g., Co_2 emissions)
  - Indirect effects: changes in behaviour (e.g., physical activity), stress, noise, social interactions, socioeconomic outcomes

Framework for Evaluating Environmental Health Impacts of Policies



Benavides et al 2022

The Mindmap project: Urban environments, mental health and cognitive function



Policies

- Transportation
- Green Space
- Air pollution
- Land use
- Facilities

MINDMAP
Promoting mental well-being and healthy ageing in cities

Three urban environmental policy examples

Transportation

Urban regeneration

Green spaces

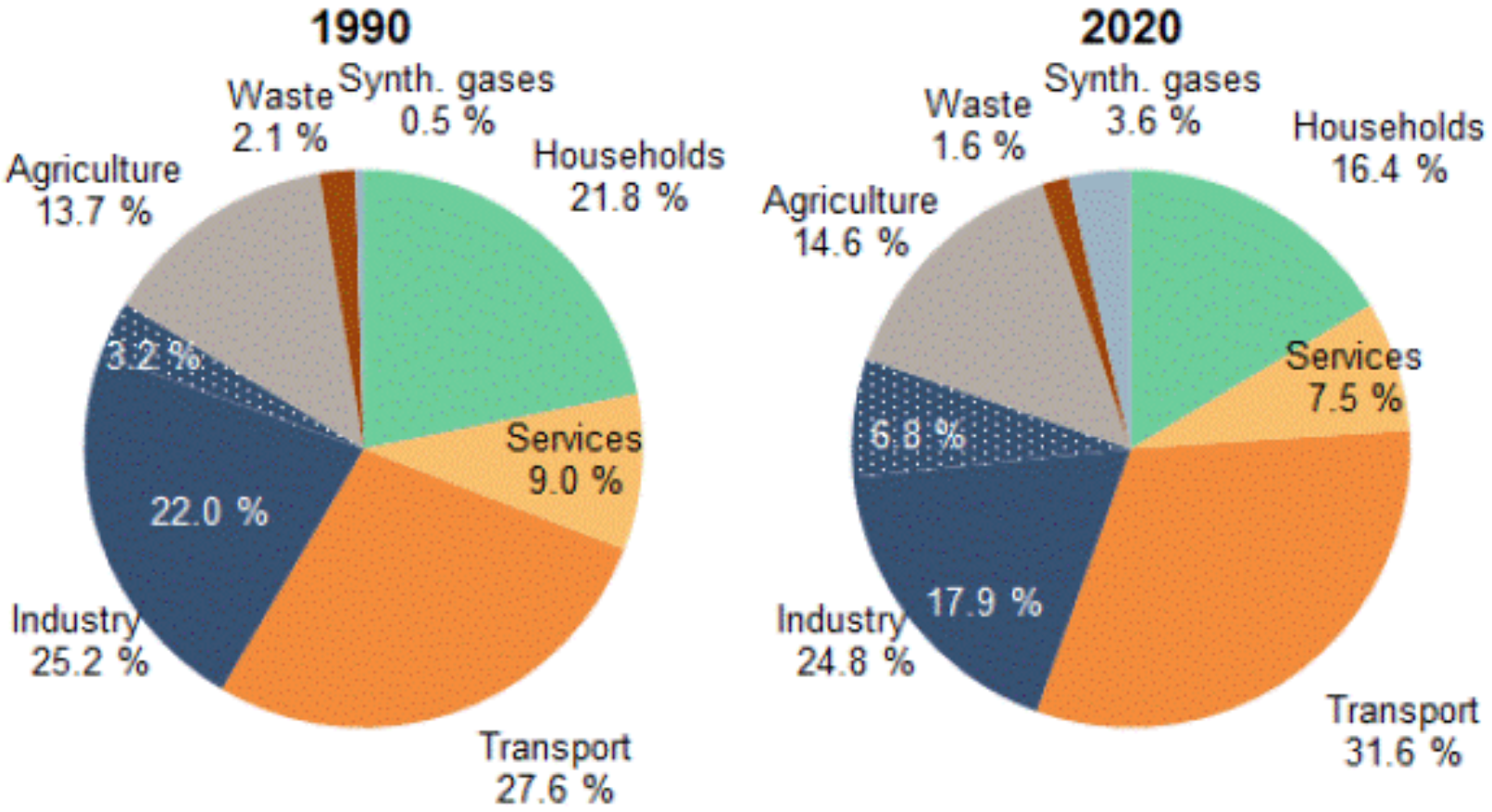
1. Public transport policy: The free Bus Pass

Co-benefits of transport-related climate change mitigation

- An opportunity to achieve multiple goals ('win-win strategies'):
  - Reduce greenhouse gas emissions;
  - promote physical activity;
  - reduce air pollution;
  - reduce noise;
  - reduce injuries;
  - liberate urban space for parks and cycleways

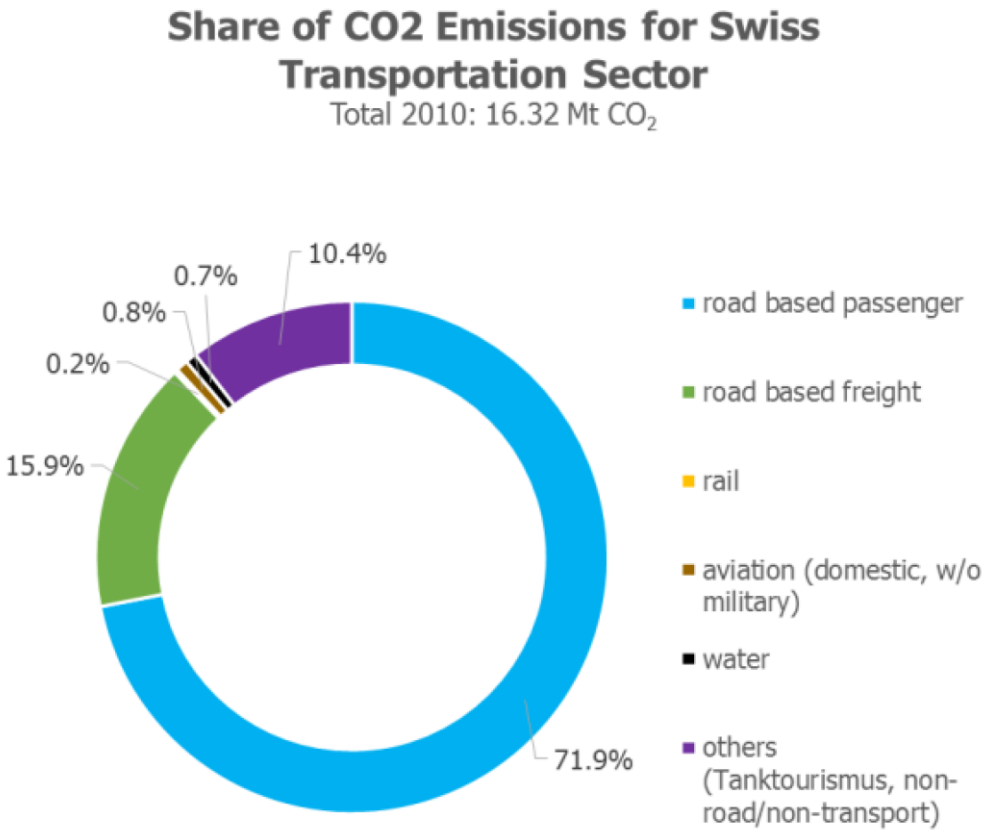
Federal Office for the Environment FOEN, 2022

Greenhouse gas emissions in 1990 and 2020 by sector in Switzerland (transport excludes aviation and navigation)

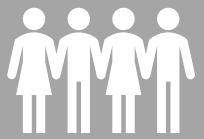


Federal Office for the Environment FOEN, 2022

Share of $C0_2$ Emissions for Swiss Transportation Sector, 2010



Can a policy that incentivise public transport use improve mental and cognitive health?



English Longitudinal Study of Ageing, 2002 – 2014

18,483 participants 50+ and observed at least once

Measure of public transport use

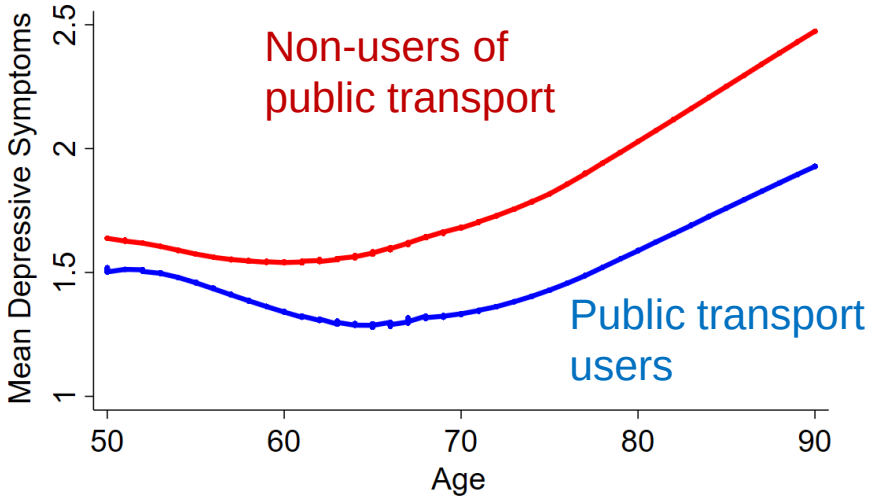
Policy: Free Bus Travel Eligibility

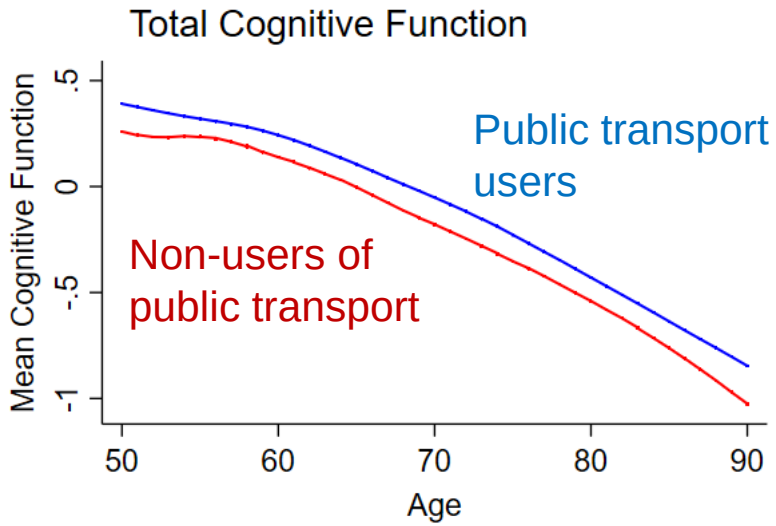
2006-2010: Age 60 and older

2010-2014: Eligibility age increases gradually in accordance with women's state pension age

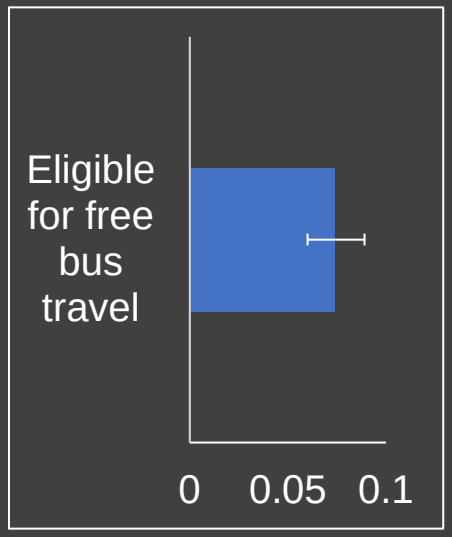
Mean depressive symptom (CESD) and cognitive function scores by age

Reinhard et al, J epi & Commun Health 2018
Reinhard et al, Am J Epi, 2019

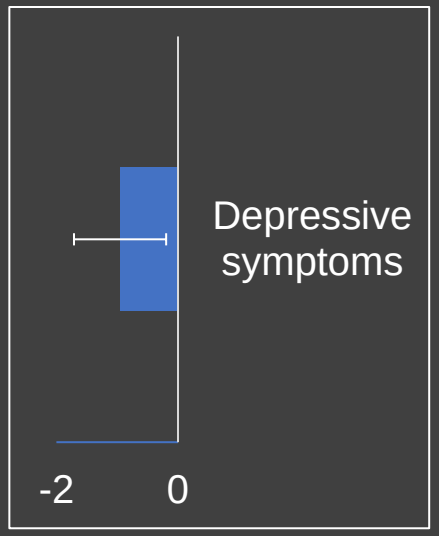




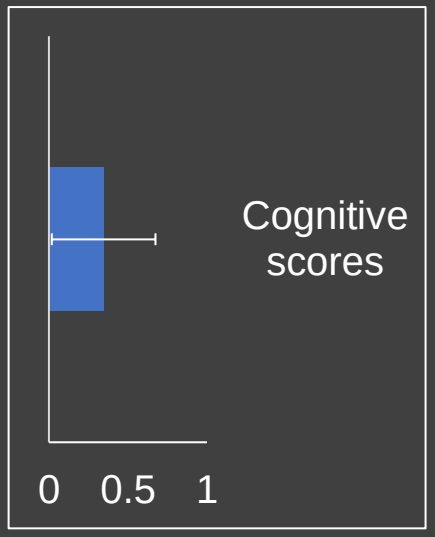
Impact of public transport use



7% increase in transport use if eligible to free bus pass



Using public transport reduces depressive symptoms



Using public transport improves cognitive scores

Reinhard et al, J epi & Commun Health 2018
Reinhard et al, Am J Epi, 2019

Conclusion –free bus pass policy

- Free bus pass policy increased use of public transportation, potentially contributing to both reducing $C0_2$ emissions and improving the mental and cognitive health of older people
- Mental and cognitive health improvements occurred through changes in social engagement, i.e., volunteering, and seeing children & friends more often

2. Green spaces and depressed affect in older adults

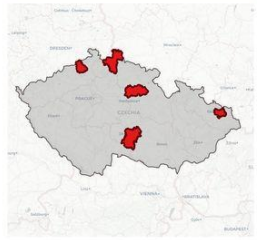
Noordzij et al., JECH, 2020

- Green space may create wins for environmental sustainability, health, and health equity
- Urban green spaces may be linked to less chronic stress (restorative functions) and favourable lifestyle factors, i.e., physical activity
- But, empirical evidence is mixed, mostly based on single city studies
- Significant pressures on urban green space: urbanization, costs of green space maintenance, and diminishing connection between people and nature

Longitudinal data from 4 cohorts in 10 cities in the Netherlands, France (Paris) and Czech Republic

Changes in green space 2004-2011

MINDMAP PROJECT

LASA	GLOBE	RECORD	HAPIEE
AMSTERDAM & ZWOLLE	EINDHOVEN	PARIS	CZECH REPUBLIC
			
LASA participants from the cities of Amsterdam and Zwolle were included. Amsterdam is the capital city of the Netherlands and the largest city of the country. Zwolle is a smaller city in the north-eastern part of the Netherlands. Population in 2006: 742,783 (Amsterdam), 111,900 (Zwolle)	GLOBE participants from the city of Eindhoven and surrounding areas were included. Eindhoven is the fifth largest city in the Netherlands. Population in 2004: 207,870	RECORD participants from the Paris metropolitan area were included. Paris is the capital of France and its metropolitan area houses approximately 19% of France's population. Population in 2008: 12,089,098	HAPIEE respondents from Hradec Králové, Jihlava, Liberec, Ostrava, and Ústí nad Labem were included. Population in 2006: 94,395 (Hradec Králové), 50,227 (Jihlava), 98,396 (Liberec), 309,495 (Ostrava), 94,638 (Ústí nad Labem)
2005	2004	2007	2006
n = 731	n = 4841	n = 7232	n = 3385
URBAN ATLAS 2006	URBAN ATLAS 2006	URBAN ATLAS 2006	URBAN ATLAS 2006
Green space exposure	Green space exposure	Green space exposure	Green space exposure

Impact of changes in green space on mental health

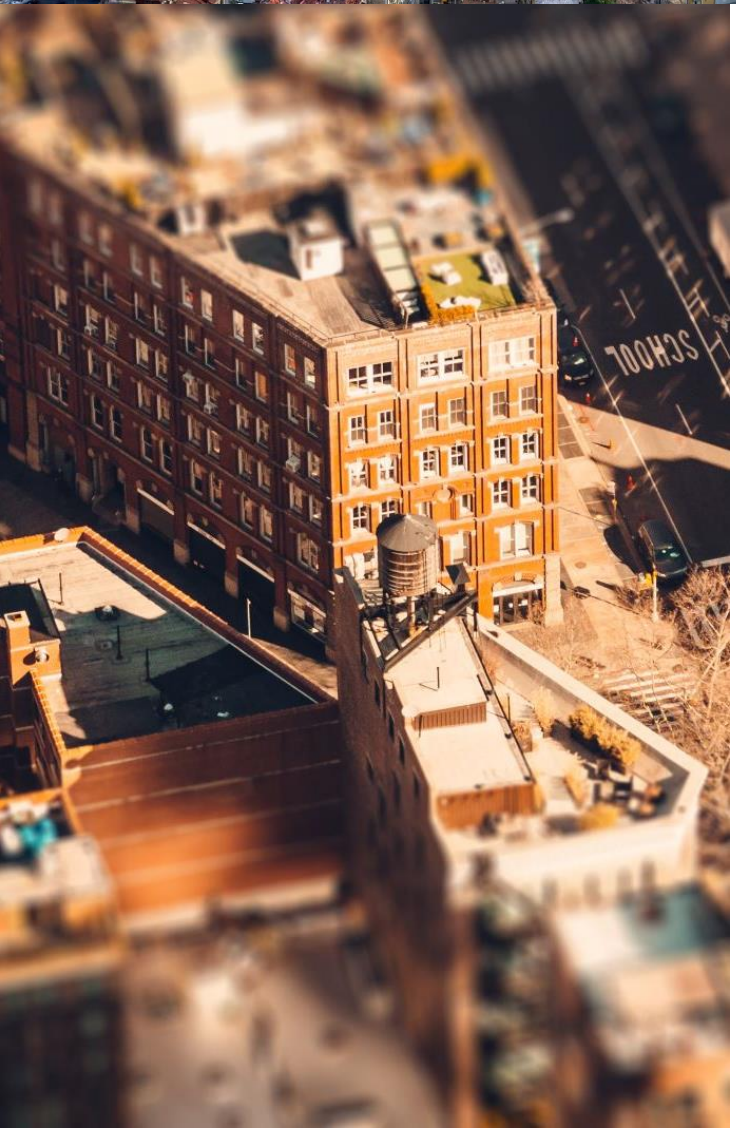
Noordzij et al., J Epi Comm Health, 2020
Noordzij et al., under review

Changes in green space proximity are not associated with changes in depressed affect

Exposure	β	95% CI	p-value
Distance to nearest green space (100m)	0.18	-0.28 ; 0.63	0.448
Distance to nearest green or blue space (100m)	0.16	-0.29 ; 0.61	0.478
Distance to nearest green or agricultural green space (100m)	0.33	-0.18 ; 0.83	0.204
Distance to nearest green, blue or agricultural green space (100m)	0.31	-0.18 ; 0.81	0.216
Green spaces within 300m Buffer (hectares)	0.06	-0.24 ; 0.36	0.703

Conclusion –green space

- Changes in green space proximity in the four studies did not lead to reductions on depressed affect
- Policies that expand access to green space may bring benefits for the environment, but we find no evidence of impacts on the mental well-being of older people
- Changes in green space too small?



3. The impact of urban regeneration on the mental health of older people

- **Urban regeneration: "**Any significant intervention improving rundown urban areas and is roughly synonymous with terms such as 'urban renewal,' 'urban revitalization,' or 'urban renaissance'" (De Magalhães 2015)

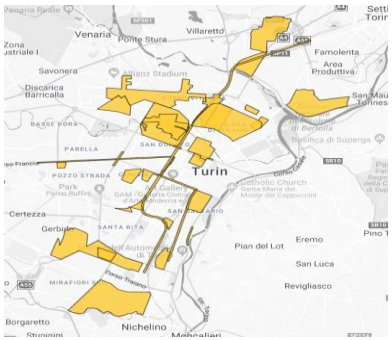
- Links to Health:
  - Mixed findings on health impacts
  - Lack of research on older people and those who remain in regenerated areas (Kleinhans et al 2014)

Linking urban regeneration projects to data on individual health

Individual demographics & outcomes from the Turin Longitudinal Study

Regeneration Data from the Istituto Superiore sui Sistemi Territoriali per l'Innovazione

Turin Longitudinal Study



Outcome:
At least 1 anti-depressant prescription

Exposure:
1. Any Regeneration
2. Type of Regeneration

2001 → **2013**

Examples of Interventions in Turin

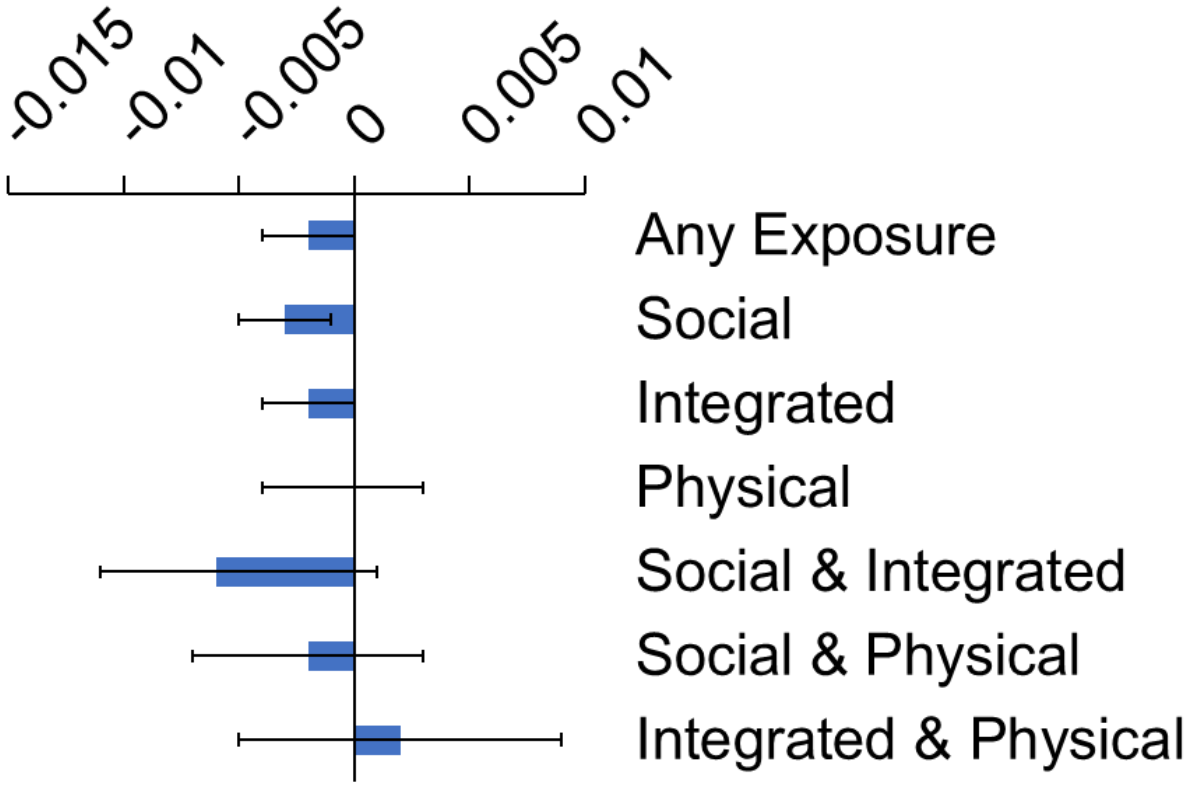
1. Social:
San Salvario

2. Physical:
Metro lines

3. Integrated:
Mirafiori Nord

Fixed effects: Impact of urban regeneration exposure on anti-depressant prescription

Reinhard et al, in preparation



Conclusion –urban regeneration

- Social environmental (people-focused) interventions reduced probability of anti-depressant prescriptions
  - Turin's social regeneration projects included establishing community centres, promoting social cohesion, preventing gentrification, & preserving neighbourhood identity
- Physical infrastructure projects had no impact on the mental wellbeing of older people

Conclusion

- Important variation in ability of policies to improve both environmental and health outcomes - not always a clear win-win
- We need evidence to inform policy trade-offs, measuring impact on multiple outcomes, and disentangling complex mechanisms
- Measuring impacts requires data infrastructure and rigorous study designs that link longitudinal data to environmental policy reforms
- Establishing policy effects can help us identify best combination of sectoral policies to achieve maximum impact and minimize trade-offs across objectives
- Empirical evidence needs to be followed by normative assessments based on relative weight attributed to each policy objective