

Stress and the City: why cities drive us mad and why they're still good for us

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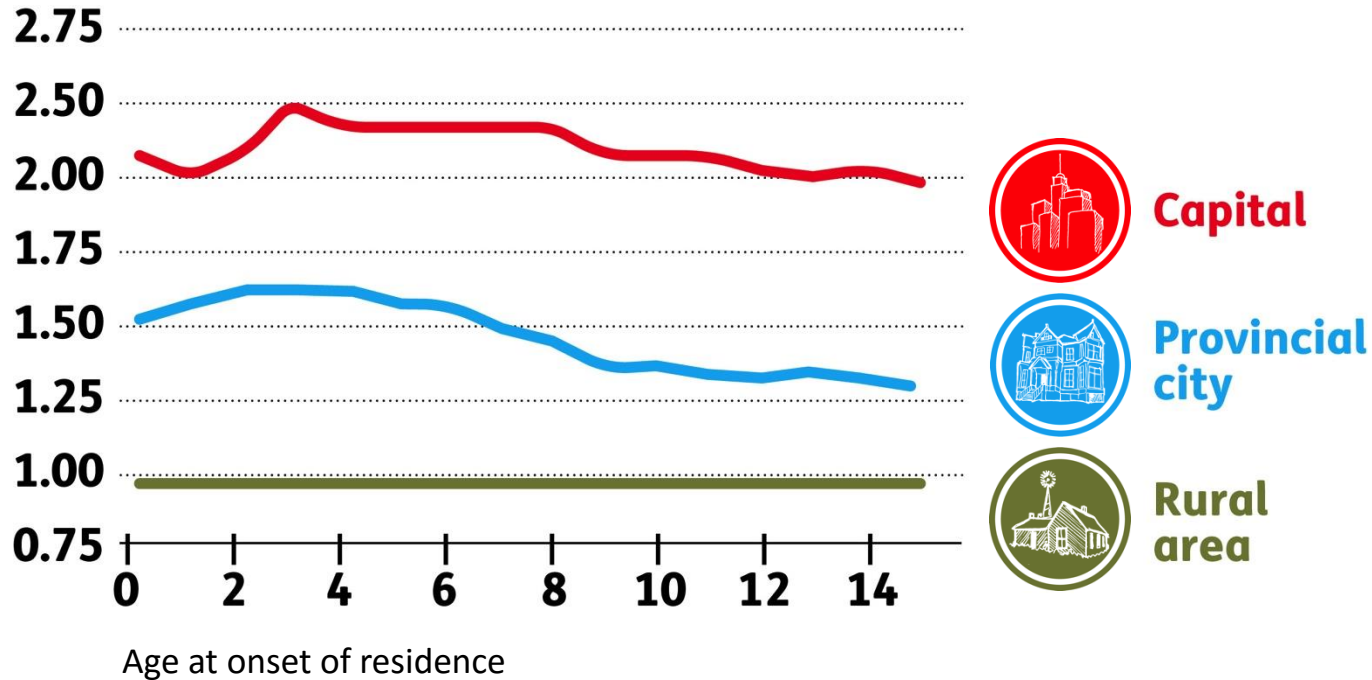
Director, Mood Disorders Research Group, Charité - Universitätsmedizin Berlin



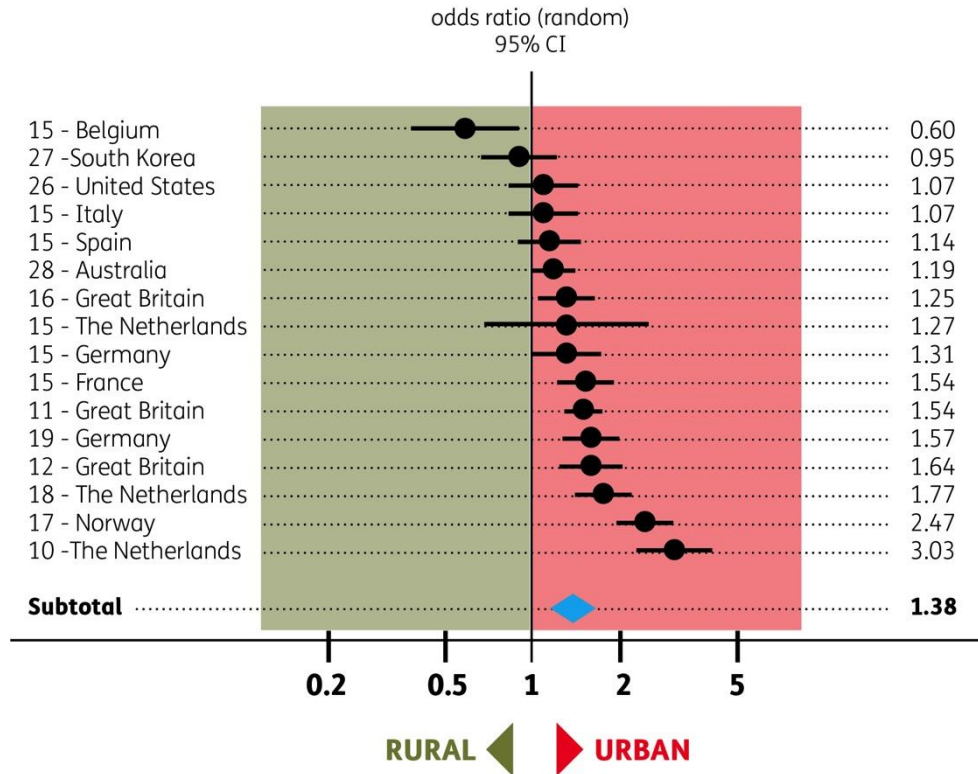




Relative risk of schizophrenia depends on urbanicity and age at residence



Mental health problems are more frequent in urban than in rural populations



Meta-Analysis

Risk difference urban vs. rural

mood disorders (e.g. depression) 39%

anxiety disorders 21%

CAUSATION
HYPOTHESIS



urban environment causes
mental-ill health

CAUSATION HYPOTHESIS



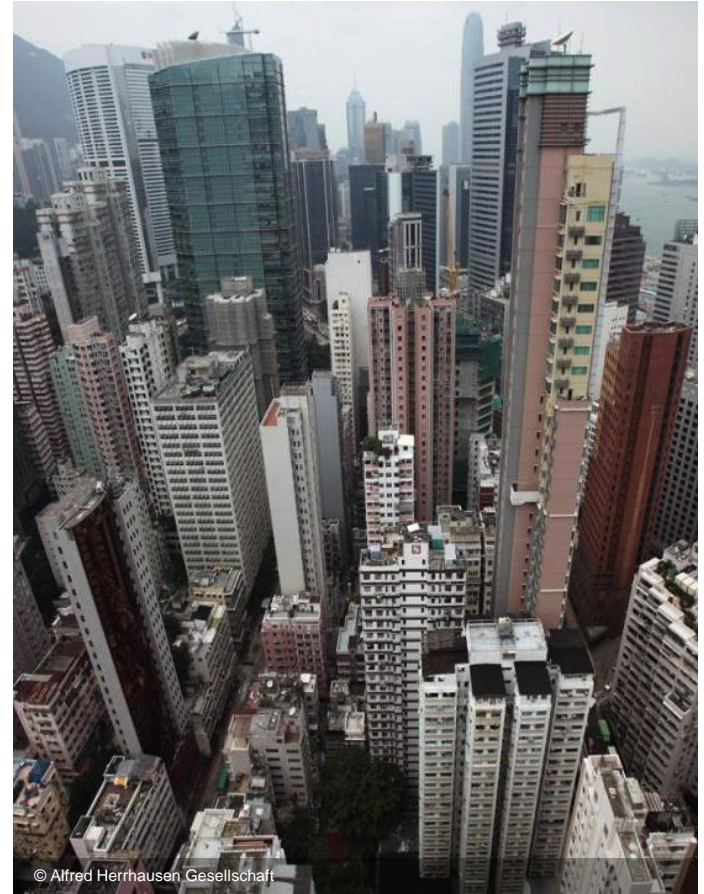
urban environment causes
mental-ill health

SELECTION HYPOTHESIS



high-risk individuals move
into urban areas

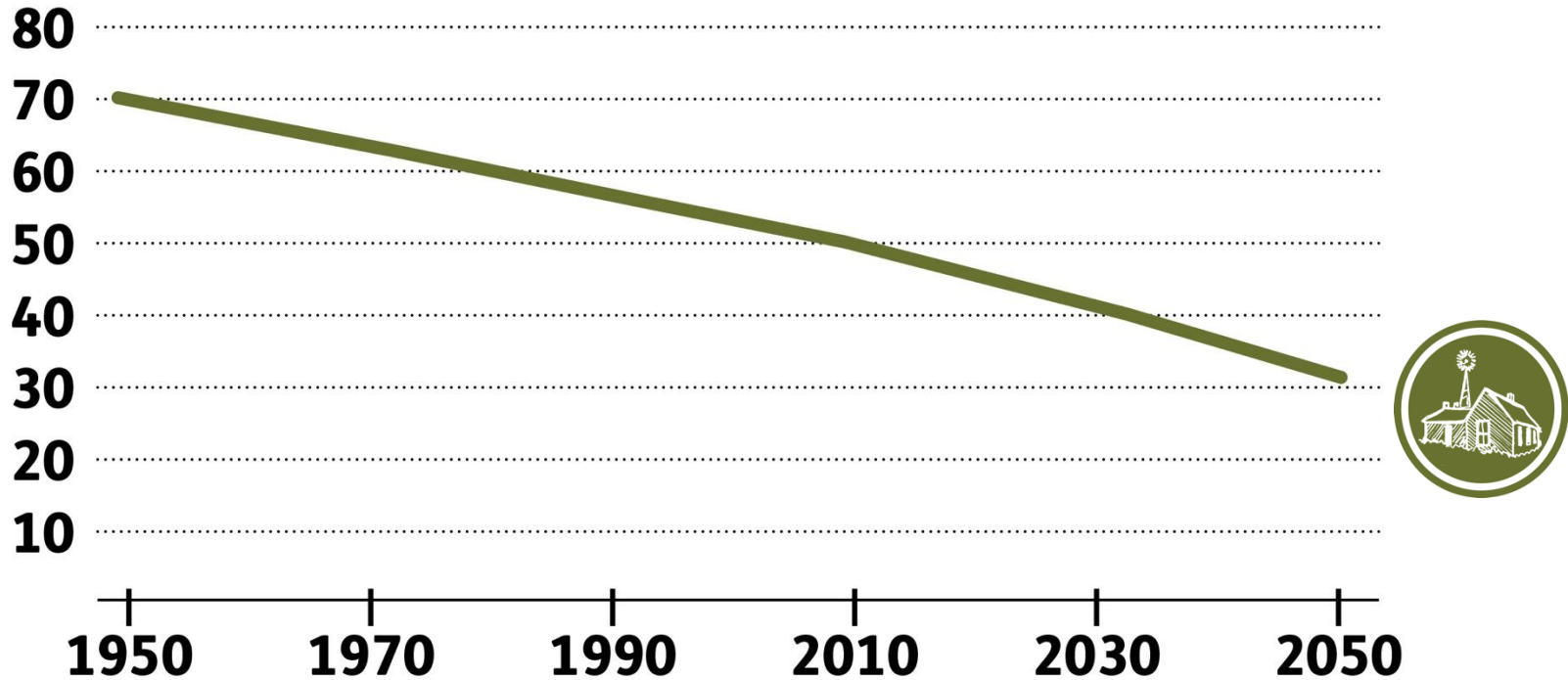
The percentage
of the global
population living in
urban regions
is growing
dramatically.



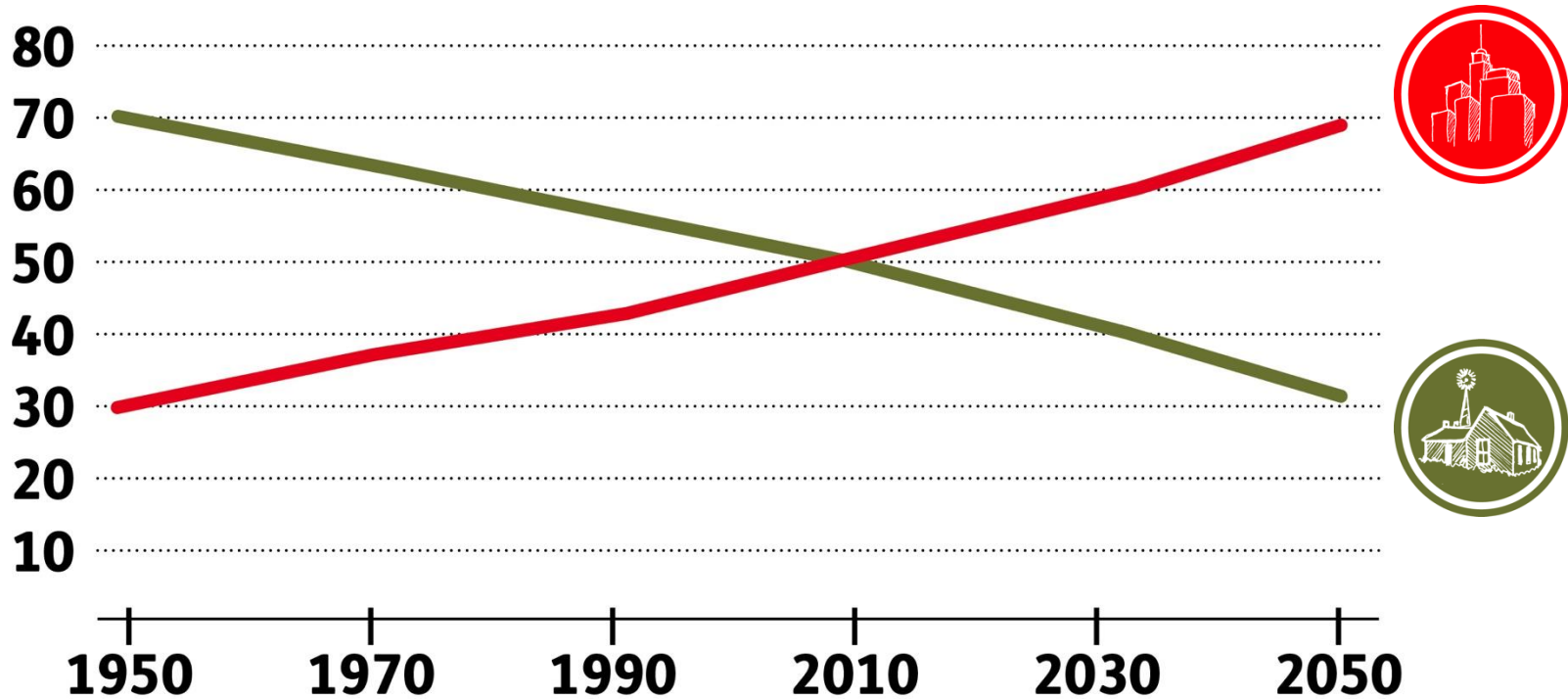
An aerial photograph of a densely populated city, likely in Asia, showing a vast urban area with numerous high-rise buildings and a large body of water in the foreground. A red line-art skyline is overlaid on the bottom of the image, representing the city's profile. The text is overlaid on the upper left portion of the image.

Urbanization is
THE global change
of the next 30 years.

Percentage of world population living in rural areas

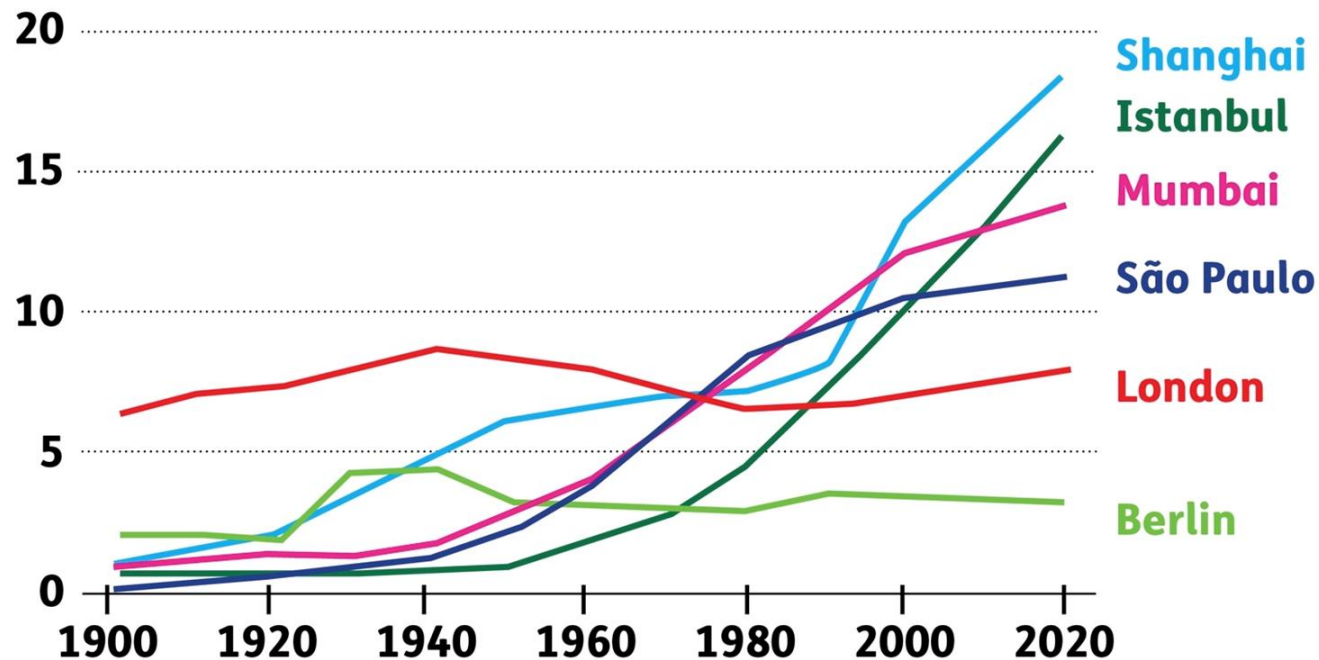


Percentage of world population living in cities

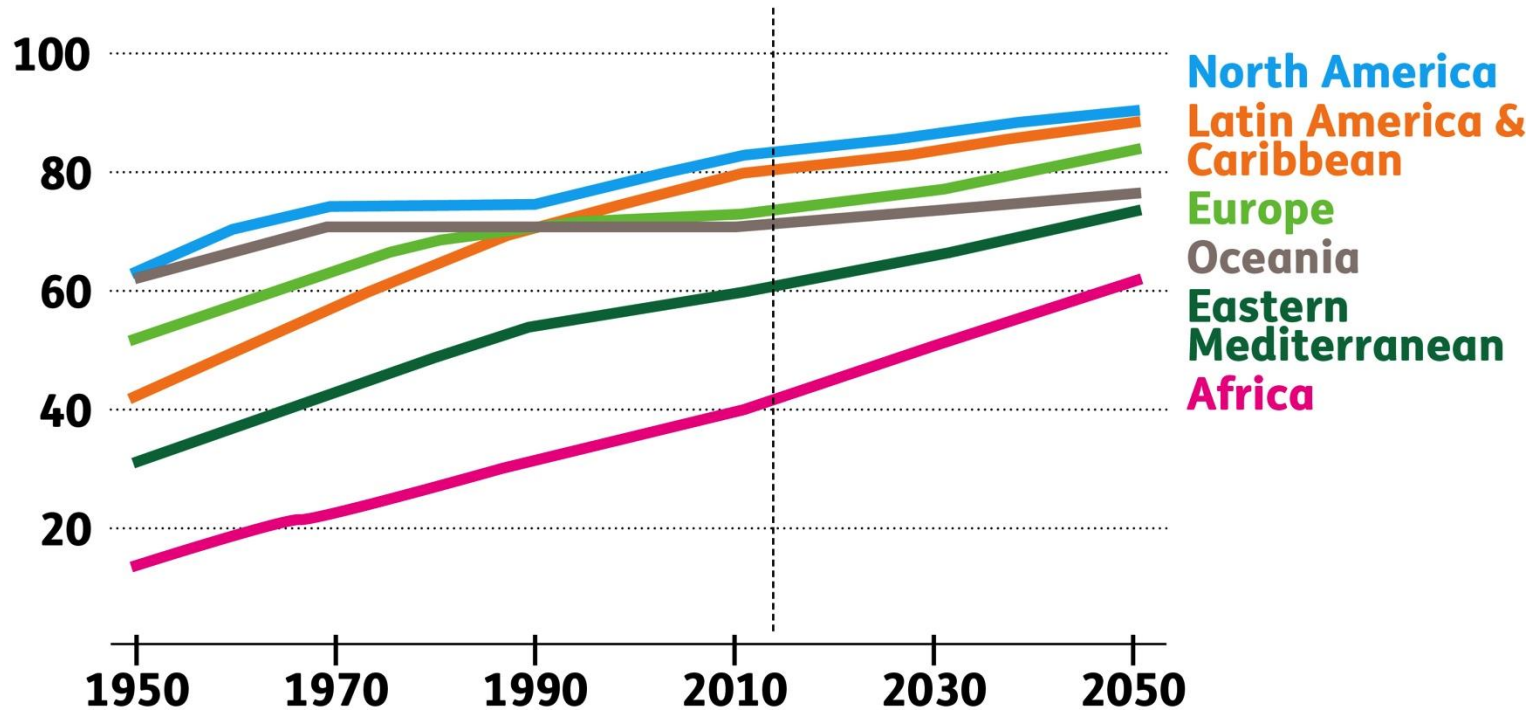


Population increase in selected megacities

million people



Growth of urban population until 2050



Is there anything like „urban stress“?



The definition of stress:

Stress is an unspecific
physical and psychological
reaction of the organism
to a challenge ahead.

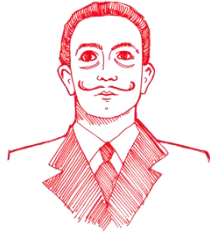
Mason, 1968



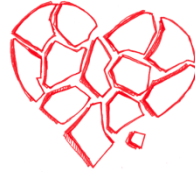
The WHO has declared stress to be one of the major health challenges of the 21st century.



Modulators of the stress response



personality traits



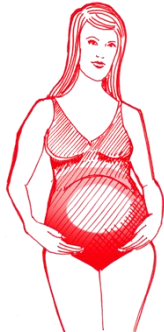
life
events



neuroendocrine
systems / GR activity



childhood



prenatal
influences



genes & epigenome



urbanicity



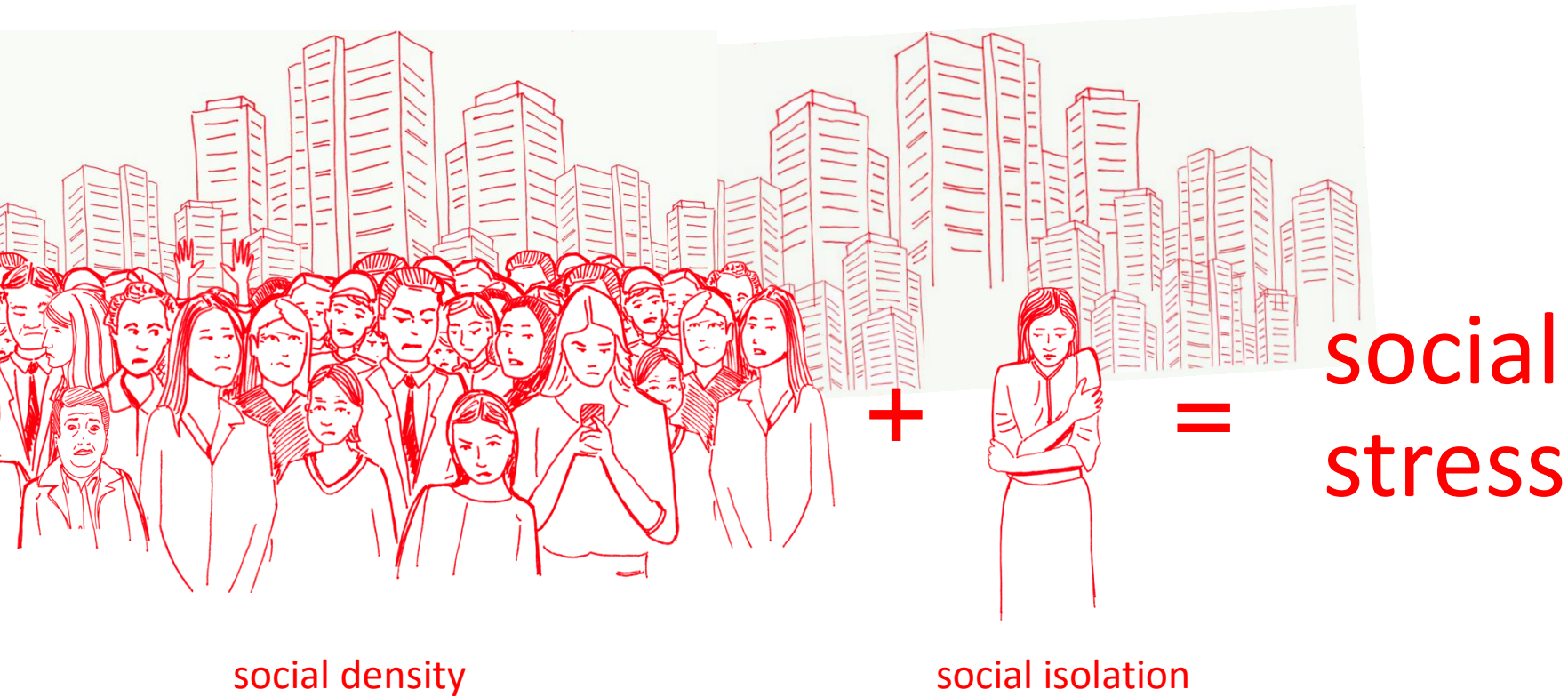


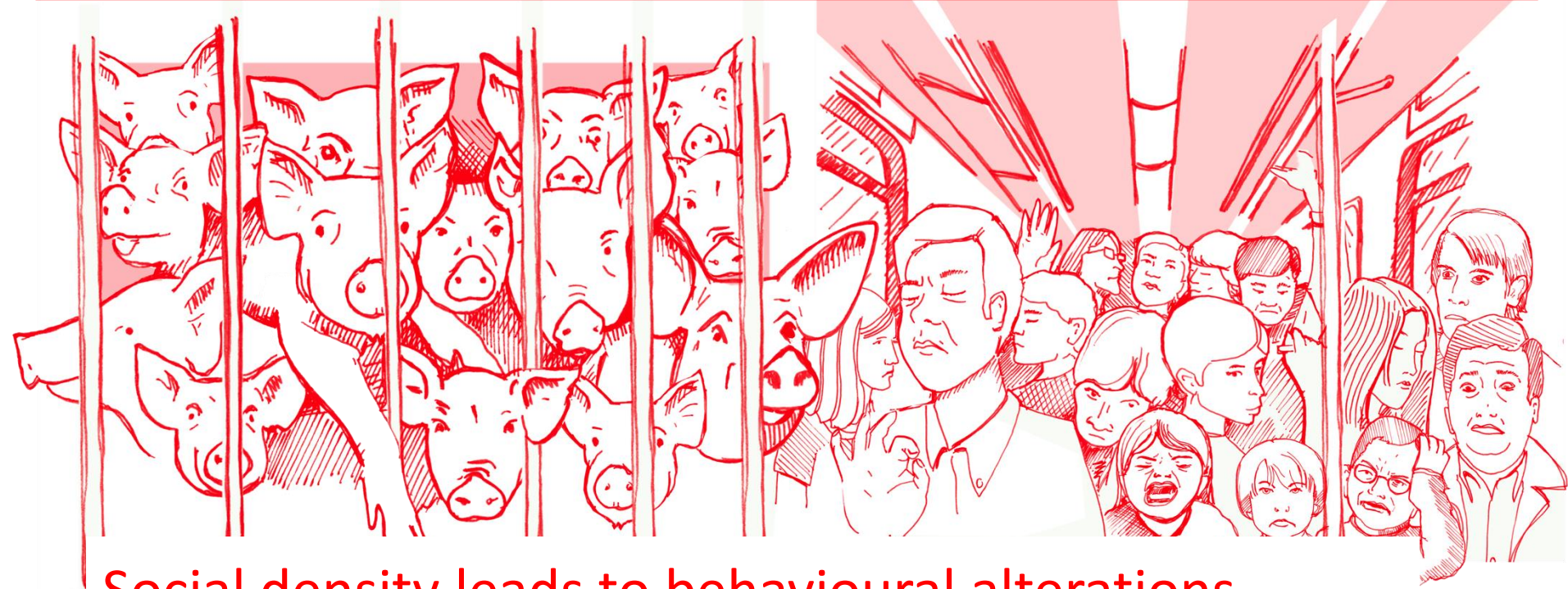
social density



social density

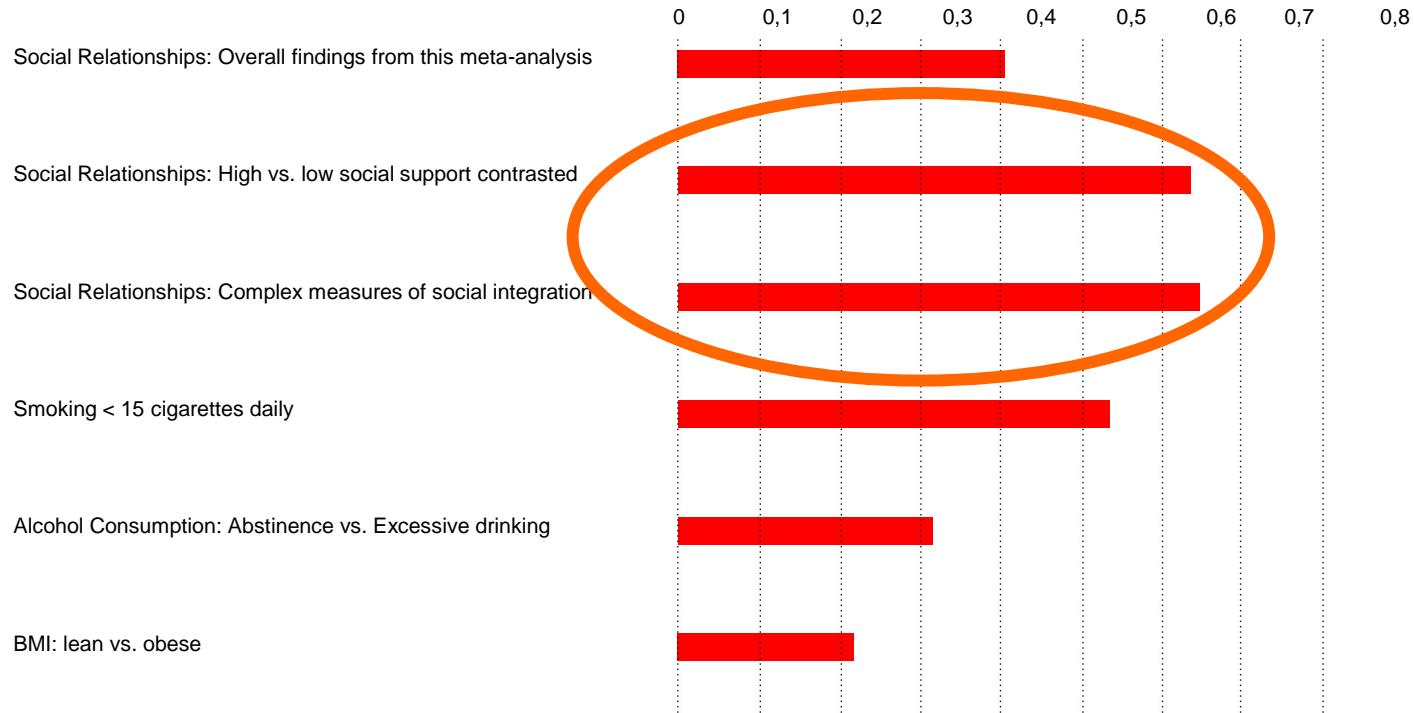
social isolation





Social density leads to behavioural alterations, irritability, mental ill health and higher mortality in many species.

Social isolation predicts premature mortality



Meta-analysis: 148 studies, 308.849 participants

Holt-Lunstadt et al. 2010, PLoS Medicine



rural

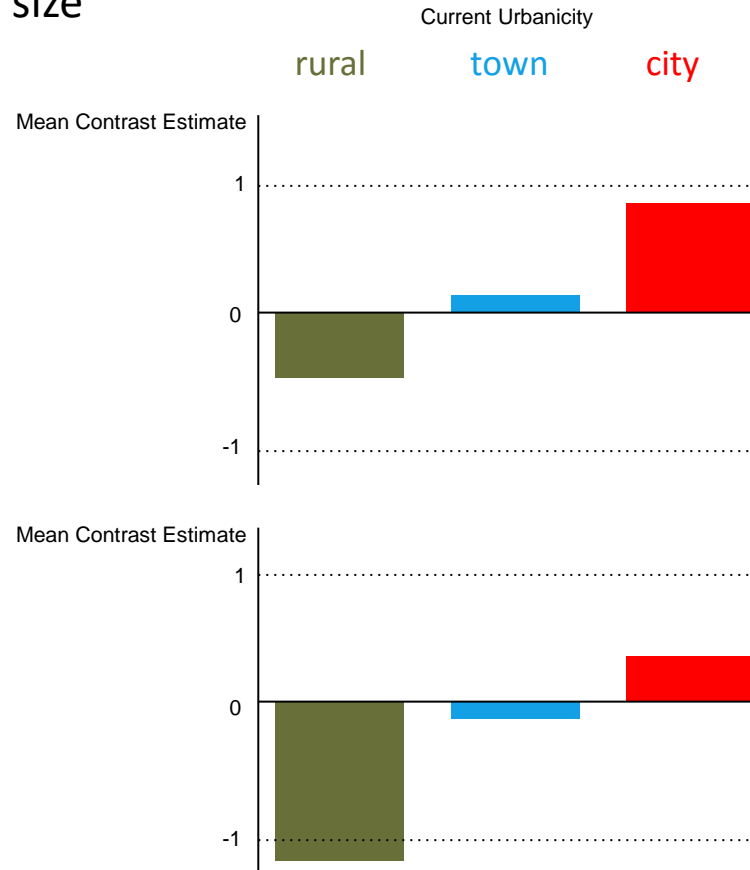
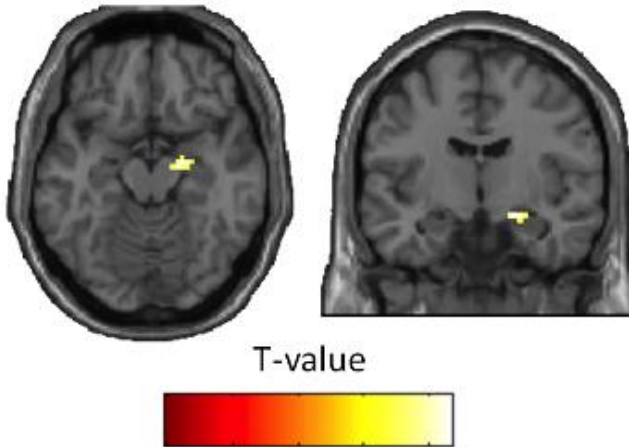


town



city

Amygdala activation correlates with city size



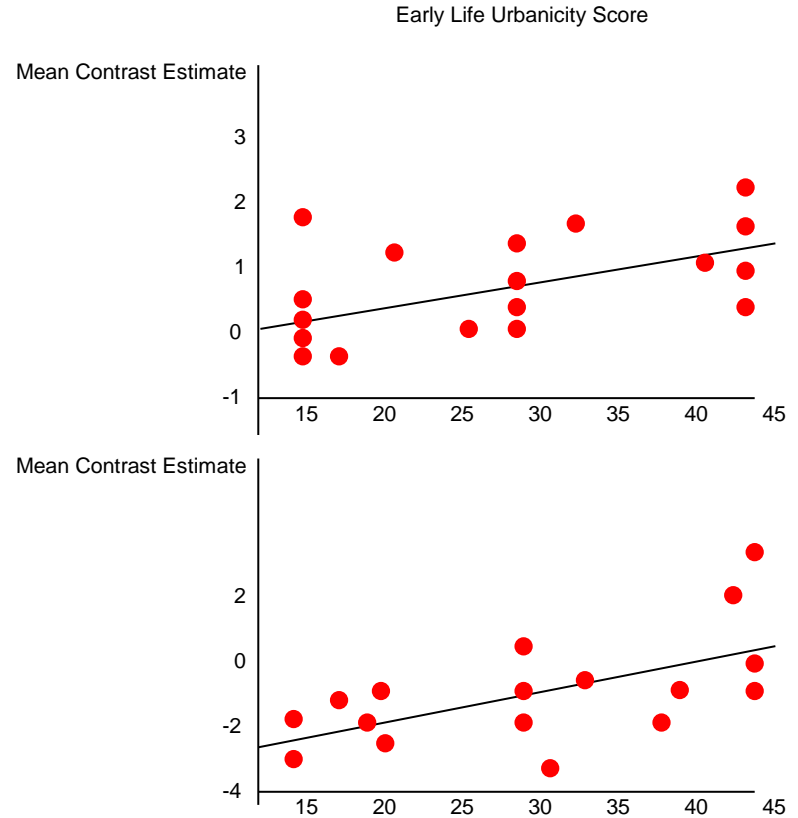
Urban birth tunes cingulate activation



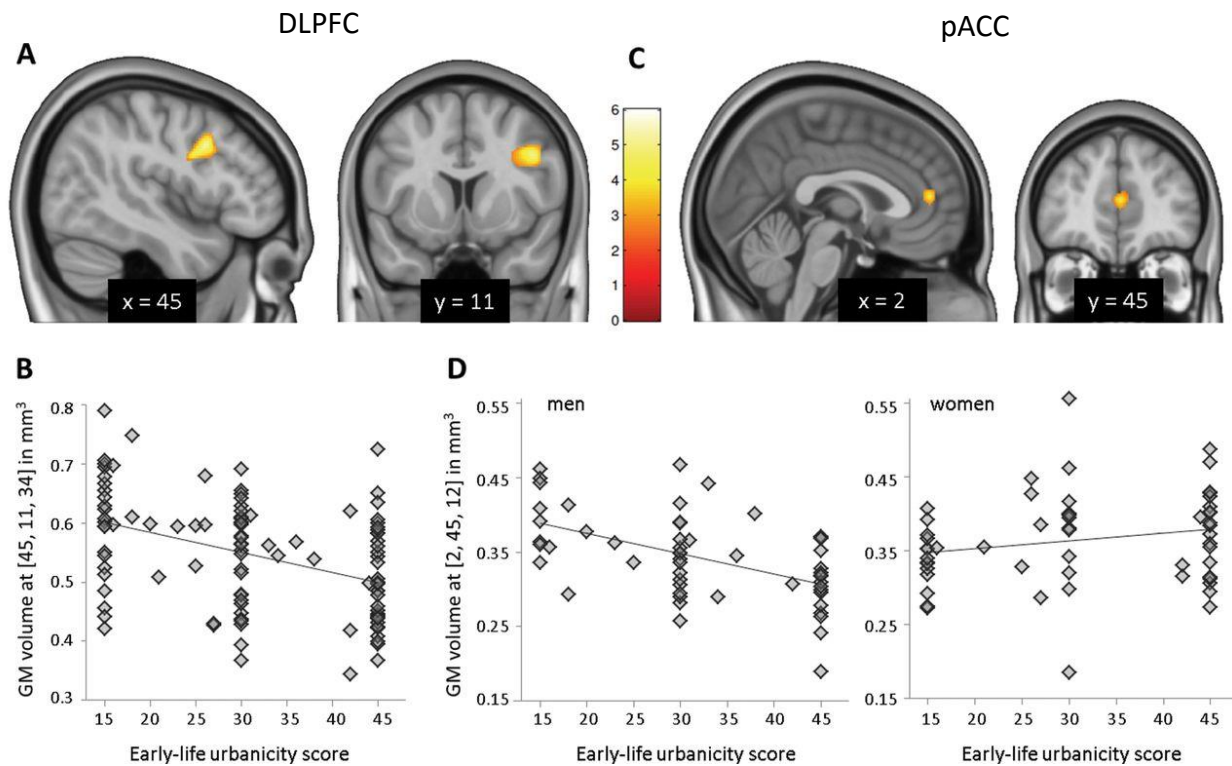
T-value



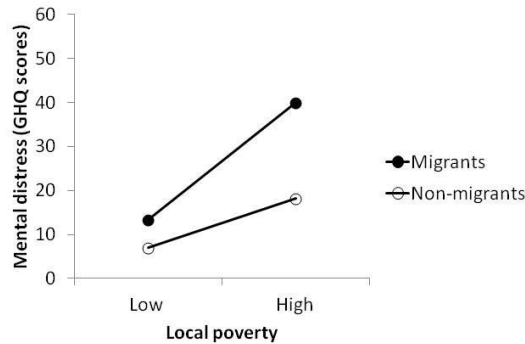
Lederbogen*, Kirsch*, Haddad* et al., Nature 2011



Early-life urbanicity and GM volume



When local poverty is more important than your income: Mental health in inner cities (Rapp et al. 2015)



Mental distress (mean GHQ-28 scores) as a function of local poverty levels, as defined by the percentage of residents on public welfare, in 11 local neighbourhoods in the inner city district of Berlin (Mitte). Percentage of residents on public welfare is depicted in yellow (low) to red (high) colour coding, and mean levels of mental distress are shown as column heights in each local neighbourhood.

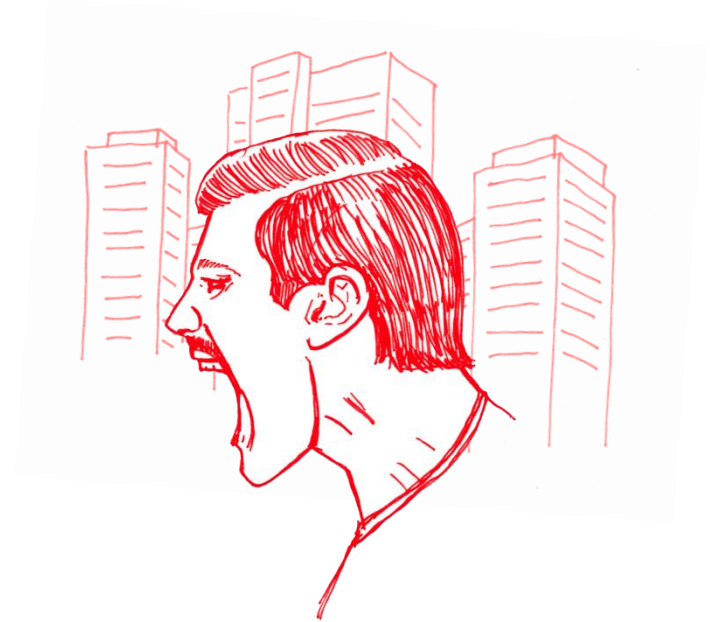
Consequences ?



There is still a lot to understand.

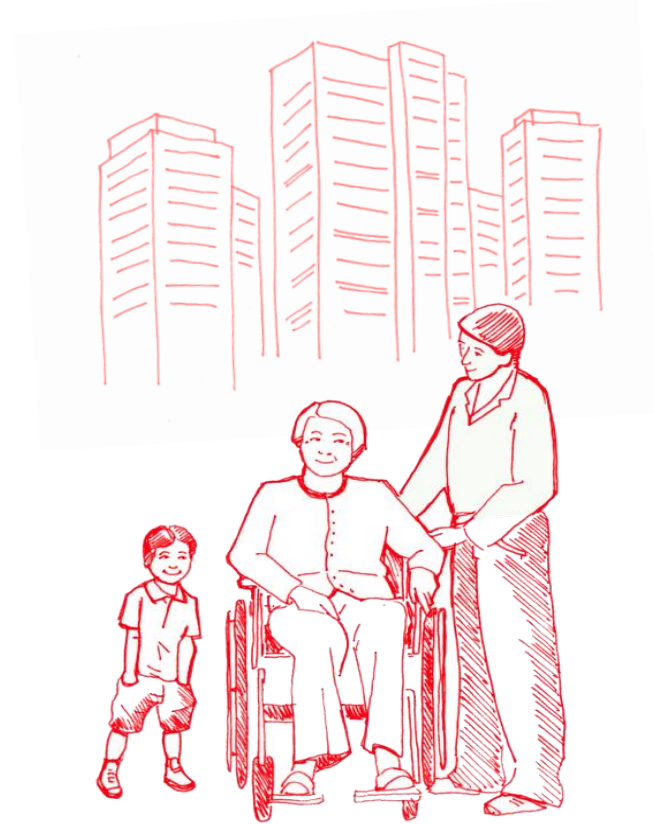


Stress-associated emotional processing



Investigate inter-individual
differences of
stress vulnerability

Identify high-risk populations
(migrants, elderly, singles)



Identify types and degrees of urban stressors



Investigate the effect of urban stressors on the developing brain



Understand health-protective factors in cities

“urban advantage”

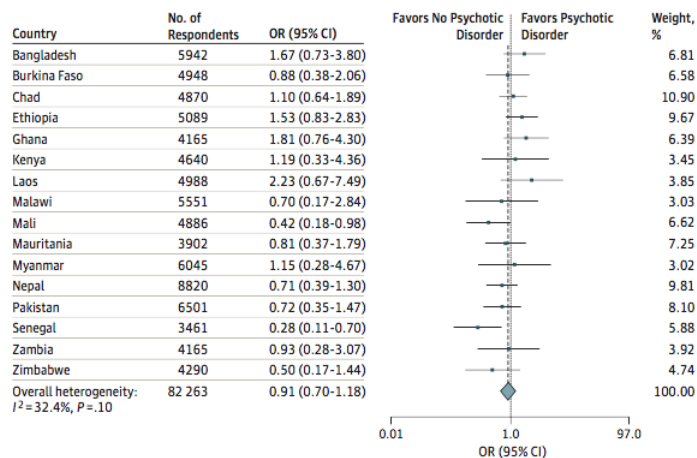


Association of Urbanicity With Psychosis in Low- and Middle-Income Countries

Jordan E. DeVlyder, PhD; Ian Kelleher, MD, PhD; Monique Lalane, MSW; Hans Oh, PhD; Bruce G. Link, PhD; Ai Koyanagi, MD, MSc, PhD

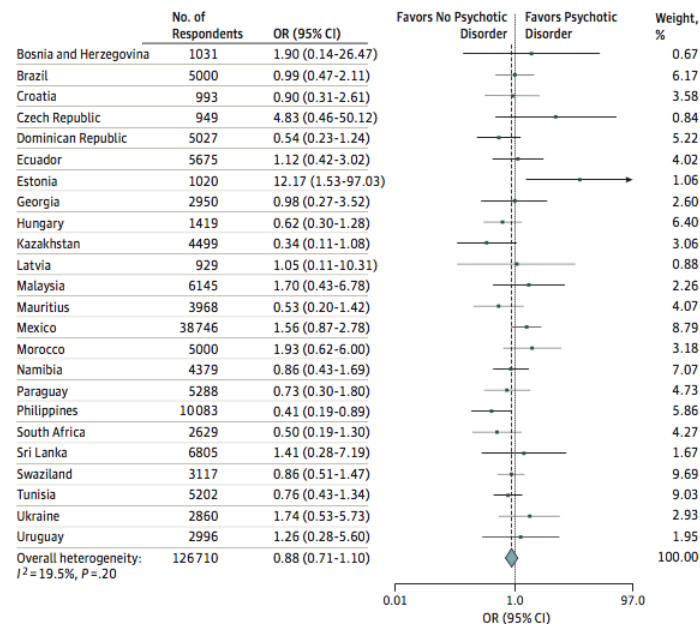
Figure 2. Countrywise Association Between Urban Residence (Exposure) and Psychotic Disorder (Outcome) by Country Income Level

A Low-income countries



B Middle-income countries

ountries



How to stimulate participation and adoption of the urban habitat ?



...which factors
increase
segregation and
fragmentation of
urban societies ?

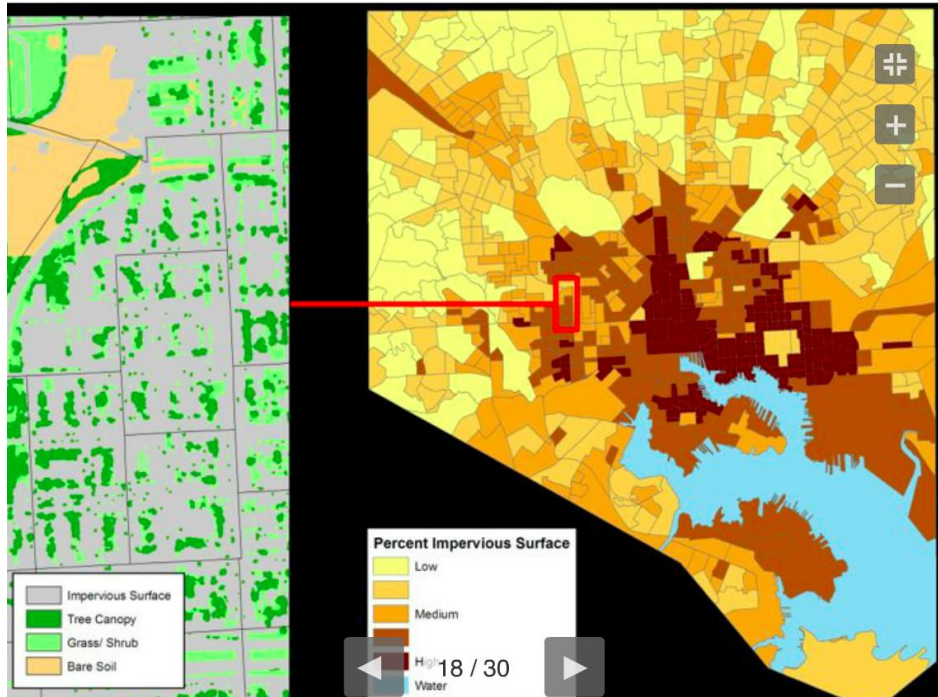
Sao Paulo, Brazil





Social Life Under Cover: Tree Canopy and Social Capital in Baltimore, Maryland

...higher tree canopy density →
stronger social cooperation



Immediate action points



Minimize the experience
of uncontrollable density
for the individual



Minimize social isolation
particularly in high-risk
populations



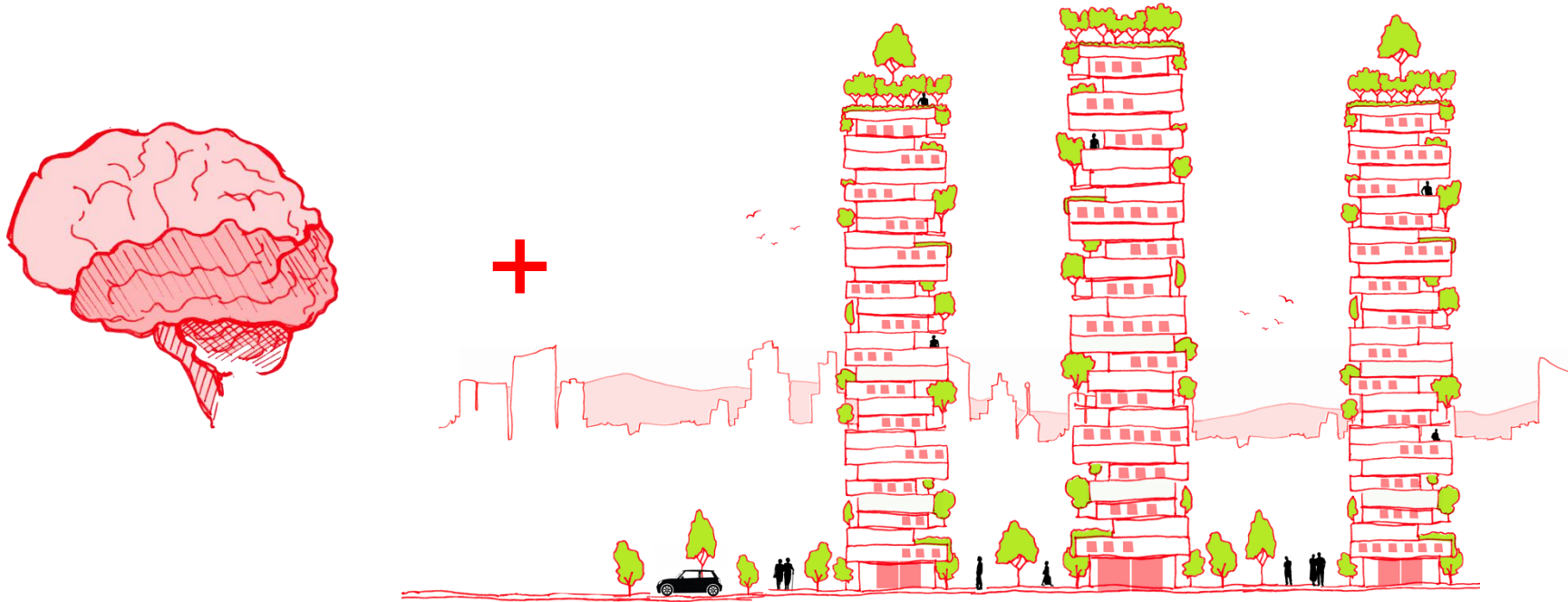
Public spaces have
an important public
health impact.



Develop prevention strategies
for public mental-health in cities.



Towards a
„NEURO-URBANISM“



Bosco Verticale, Milan by Stefano Boeri

Medicine



Philosophy



**Interdisciplinary
Forum For
Neurourbanism**

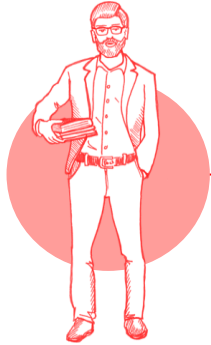


Urban Research



Architecture

Sociology



Psychology



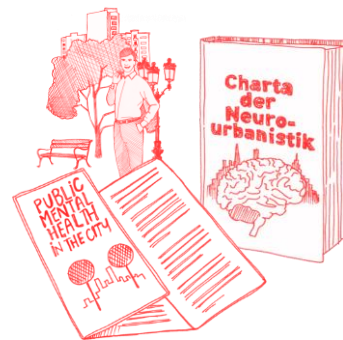
UNDERSTANDING



RESEARCH



PREVENTION



1950

2050



MAZDA ADLI

STRESS AND THE CITY

Warum Städte
uns krank machen.
Und warum sie trotzdem
gut für uns sind

C.Bertelsmann

