



**UNIMORE**

UNIVERSITÀ DEGLI STUDI DI  
MODENA E REGGIO EMILIA

# Climate change and neuro-psychiatric disease

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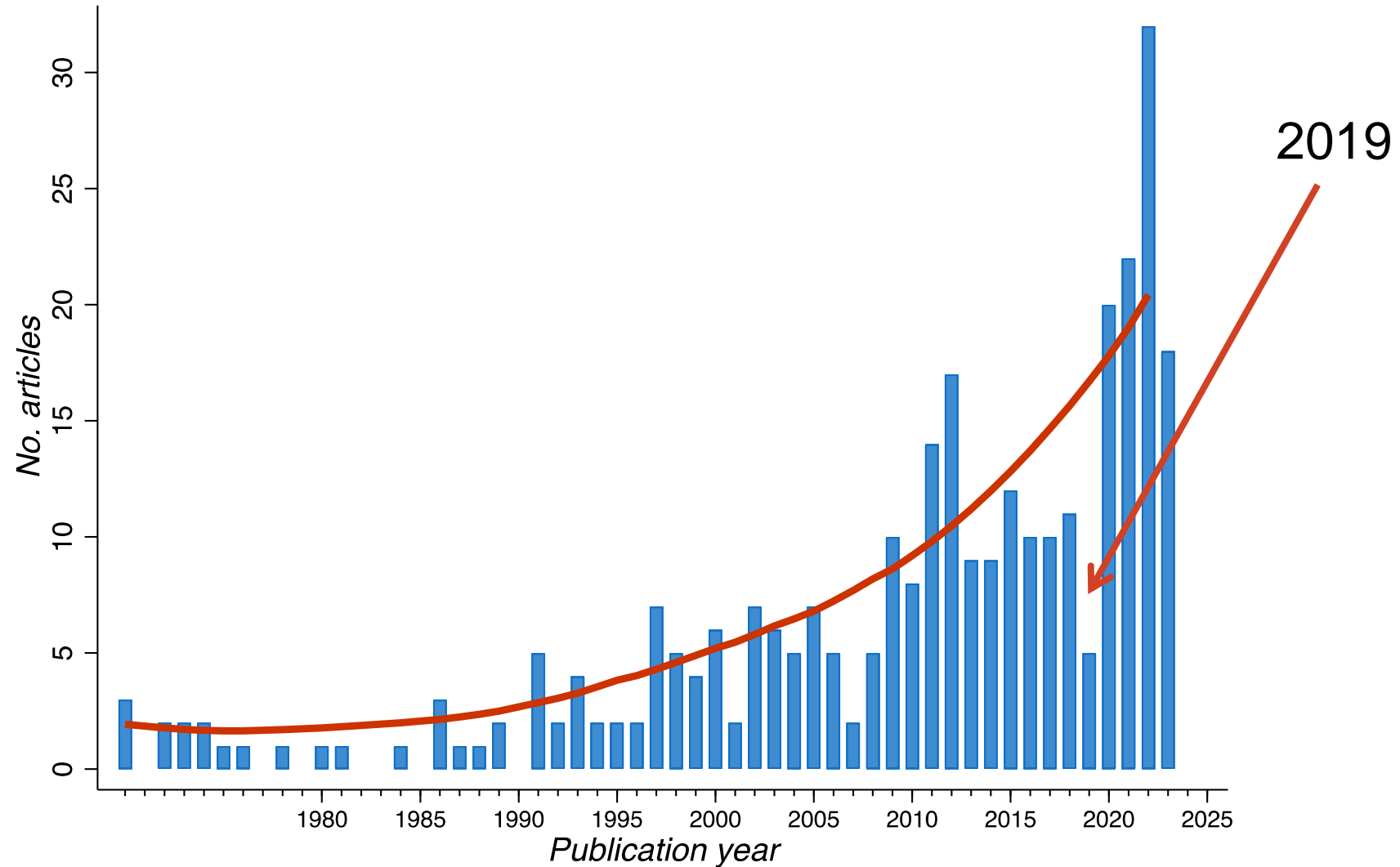
Dipartimento di Scienze Biomediche, Metaboliche e Neuroscienze, UNIMORE

**8 giugno 2023**

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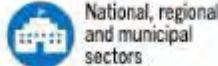
Convegno del Gruppo di Lavoro SItI Salute e Ambiente: Climate Change Public Health

# PubMed results for 'climate' and 'neuro-psychiatric diseases' in humans



# Compendium of WHO and other UN guidance on health and environment

Are you a decision-maker working in one of these areas?



National, regional and municipal sectors



NGO or development agencies



Healthcare

This compendium compiles a comprehensive collection of about 500 interventions for healthier environments that YOU can implement in the following areas:

**Water, sanitation and hygiene**

**Climate change**

**Air pollution**

**Radiation**

**Solid waste**

**Nature and health**

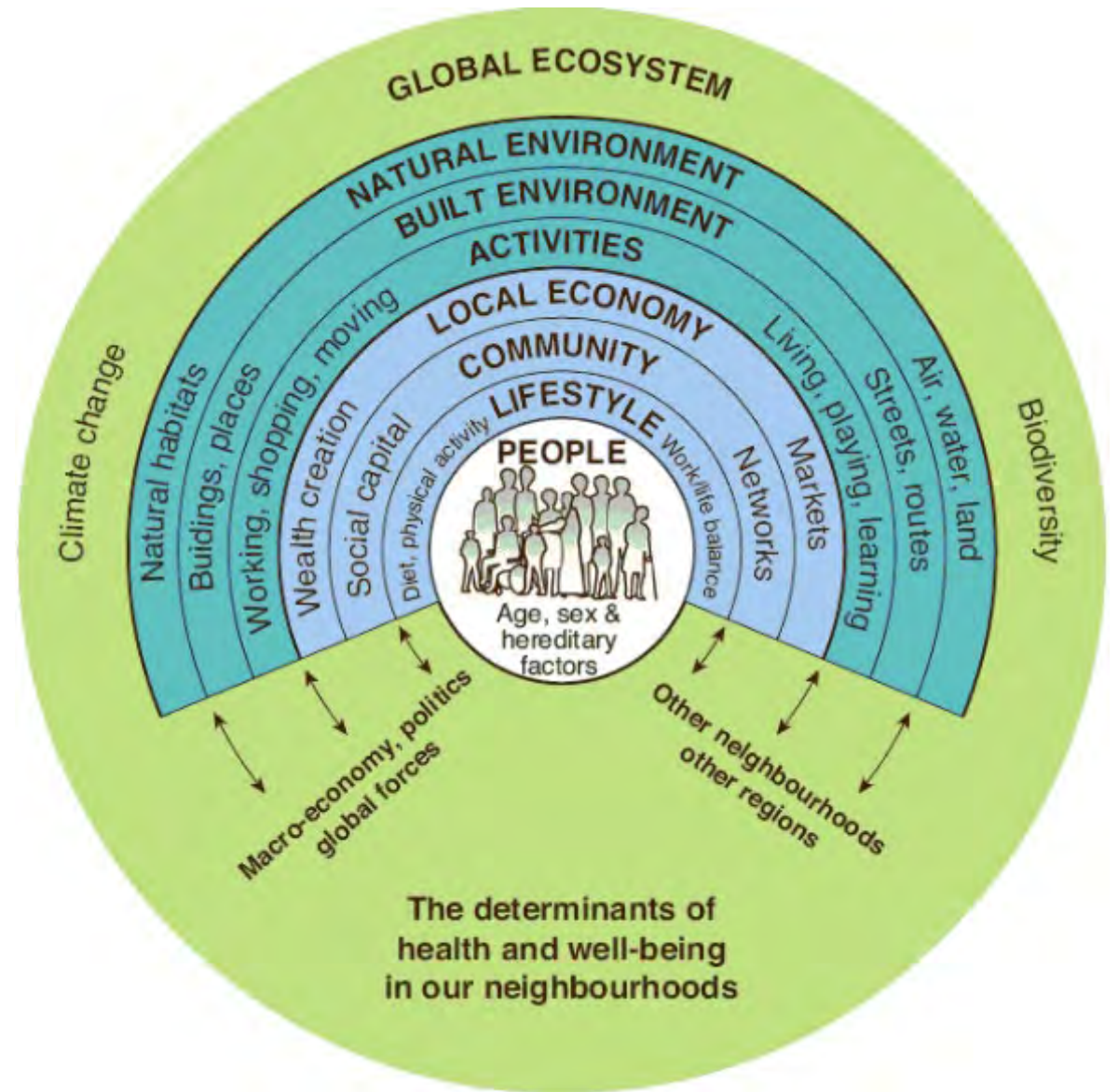
**Chemicals**

**Safe environments and mobility**

**And others:**

- Safe and healthy food
- Priority settings for action
- Cross-cutting topics

Access the compendium at <https://www.who.int/tools/compendium-on-health-and-environment>



Policy Rainbow (Dahlgren & Whitehead, 1991)

# Several possible relations between climate change and mental health

- **direct** impacts (i.e., via extreme heat or weather events such as flooding, wildfires, and hurricanes)
- **indirect** impacts (i.e., due to exacerbation of structural determinants of mental illness such as resource loss, food insecurity, and displacement)
- **overarching** impacts (i.e., pervasive distress, anxiety or grief related to the awareness of the crisis as a major threat to planetary health)



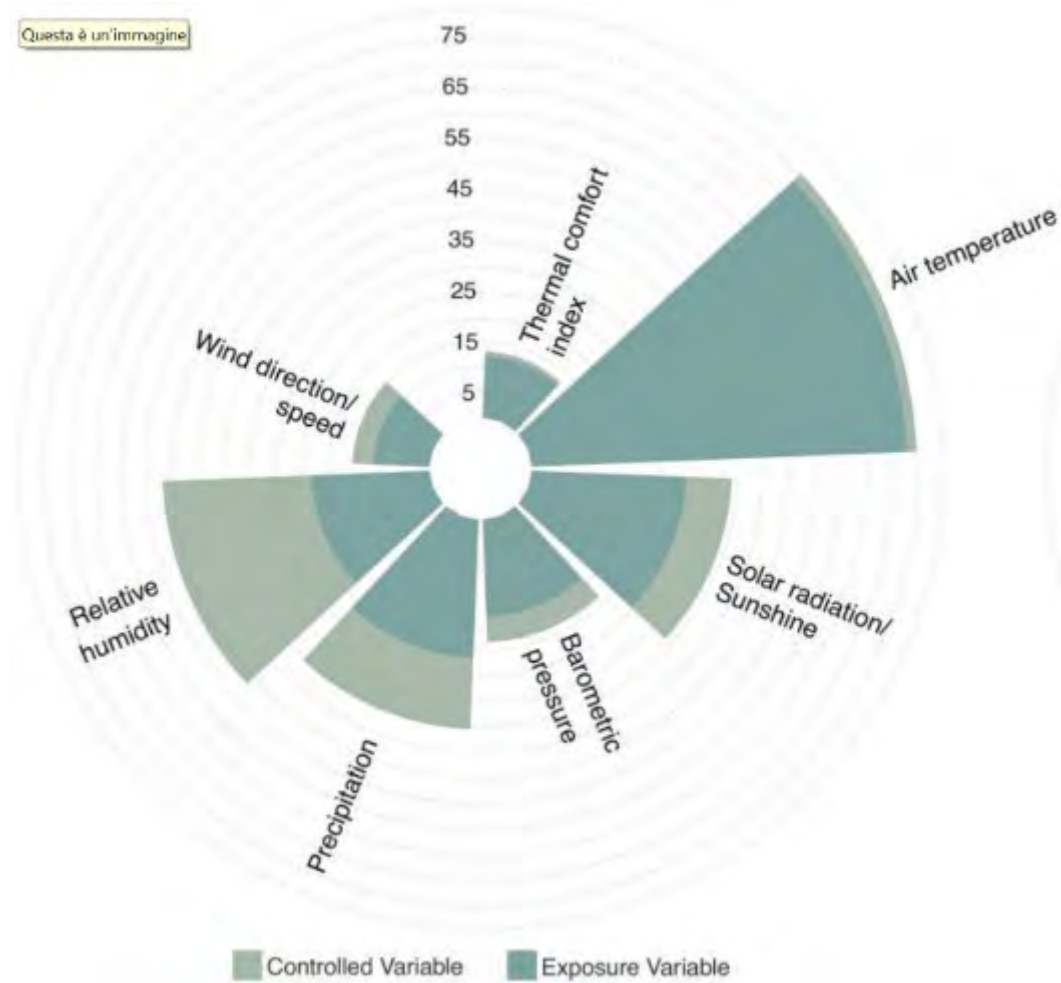




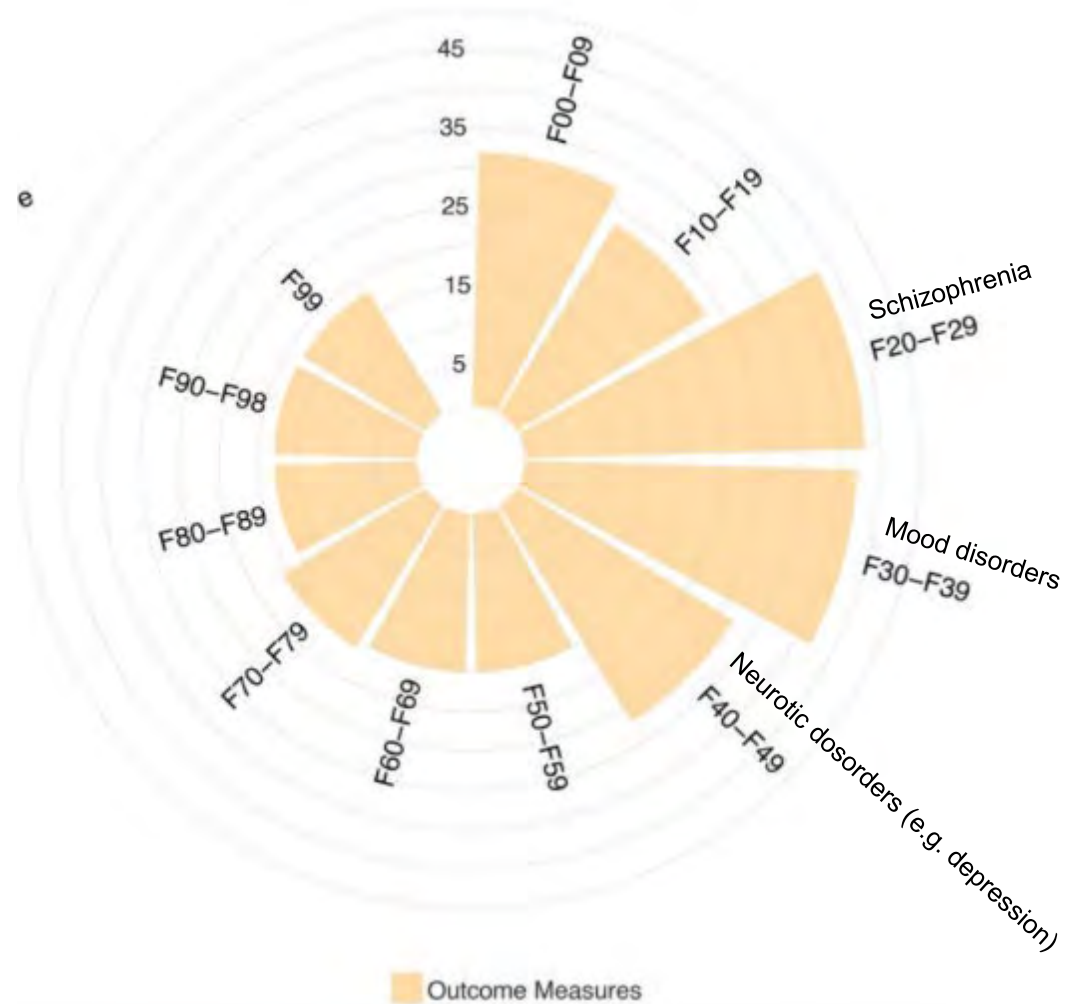
# Climate events and increased mortality risk

Heat events	depression, psychosis, schizophrenia, dementia, substance misuse
Floods	depression, anxiety, paranoid personality disorder, dementia
Wildfires	depression, anxiety
Hurricane	PTSD, ADHD

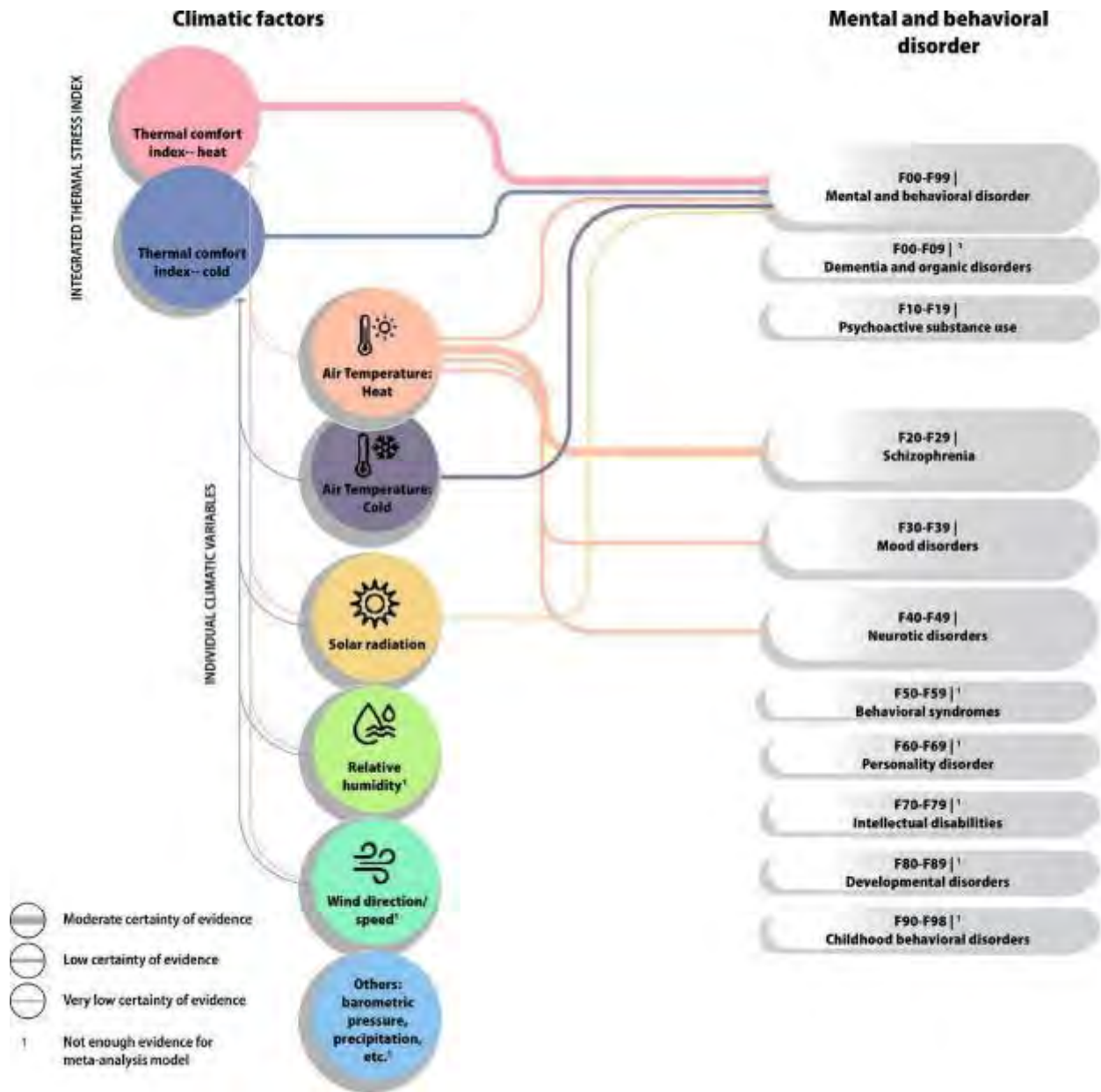
Questa è un'immagine



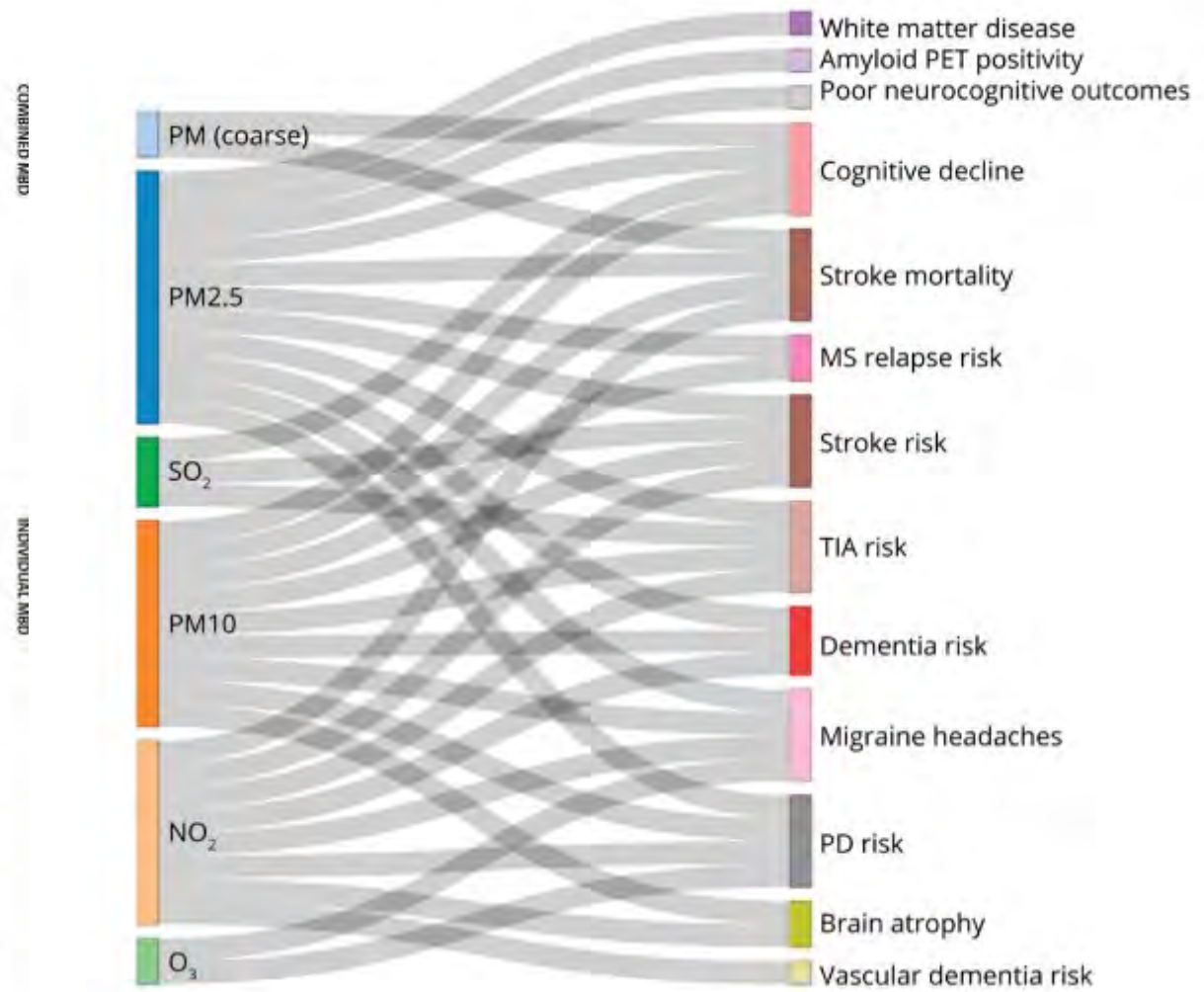
Temperature  
Solar radiation  
Precipitation  
Humidity



Note. F00-09: organic mental disorders; F10-19: psychoactive substance use; F20-29: schizophrenia; F30-39: mood disorders; F40-49: neurotic disorders; F50-59: behavioral syndrome; F60-69: personality disorders; F70-79: intellectual disabilities; F80-89: developmental disorders; F90-98: childhood behavioral disorders; F99: unspecified mental and behavioral disorders

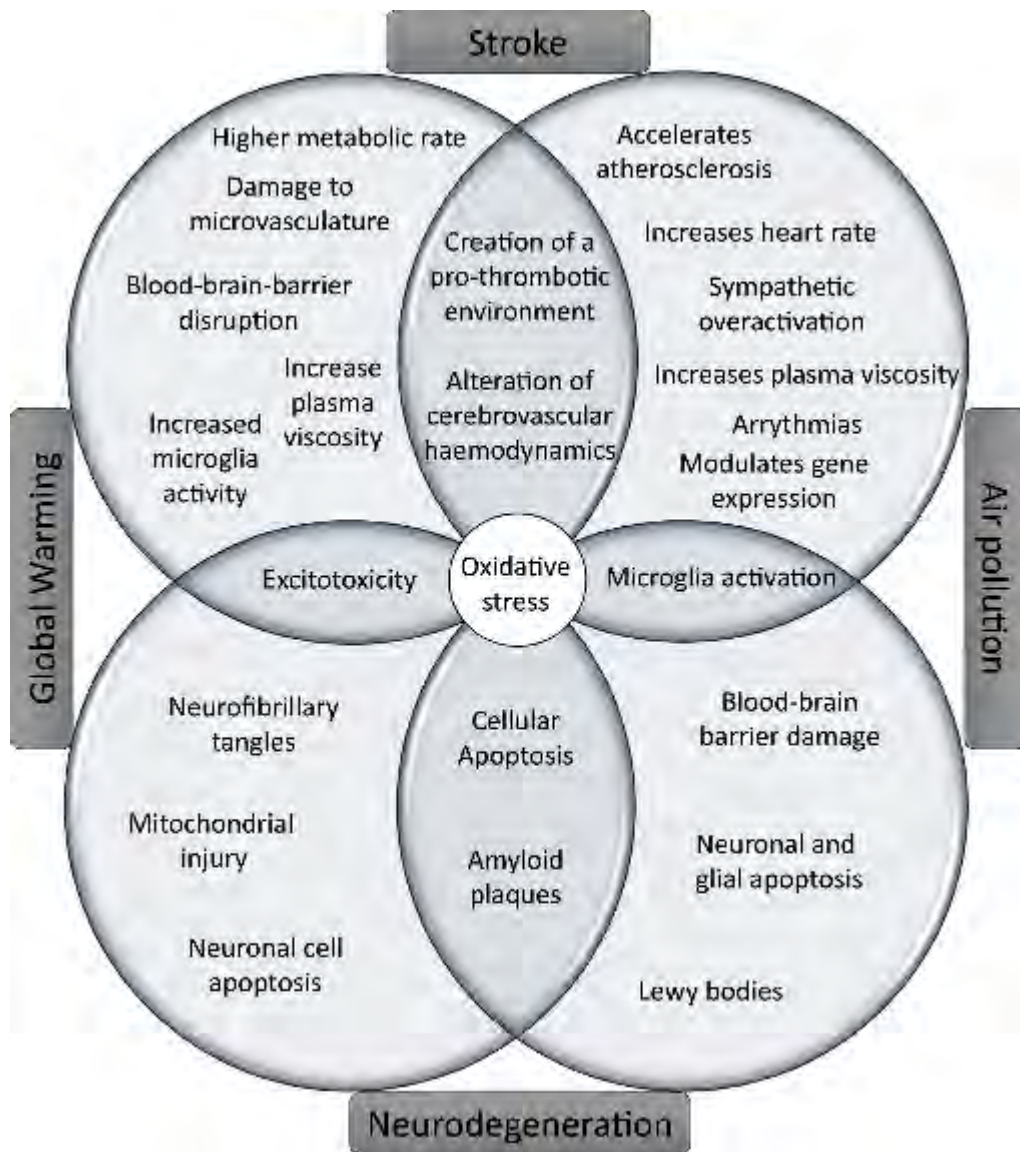


Li et al. Sci Total Environ 2023

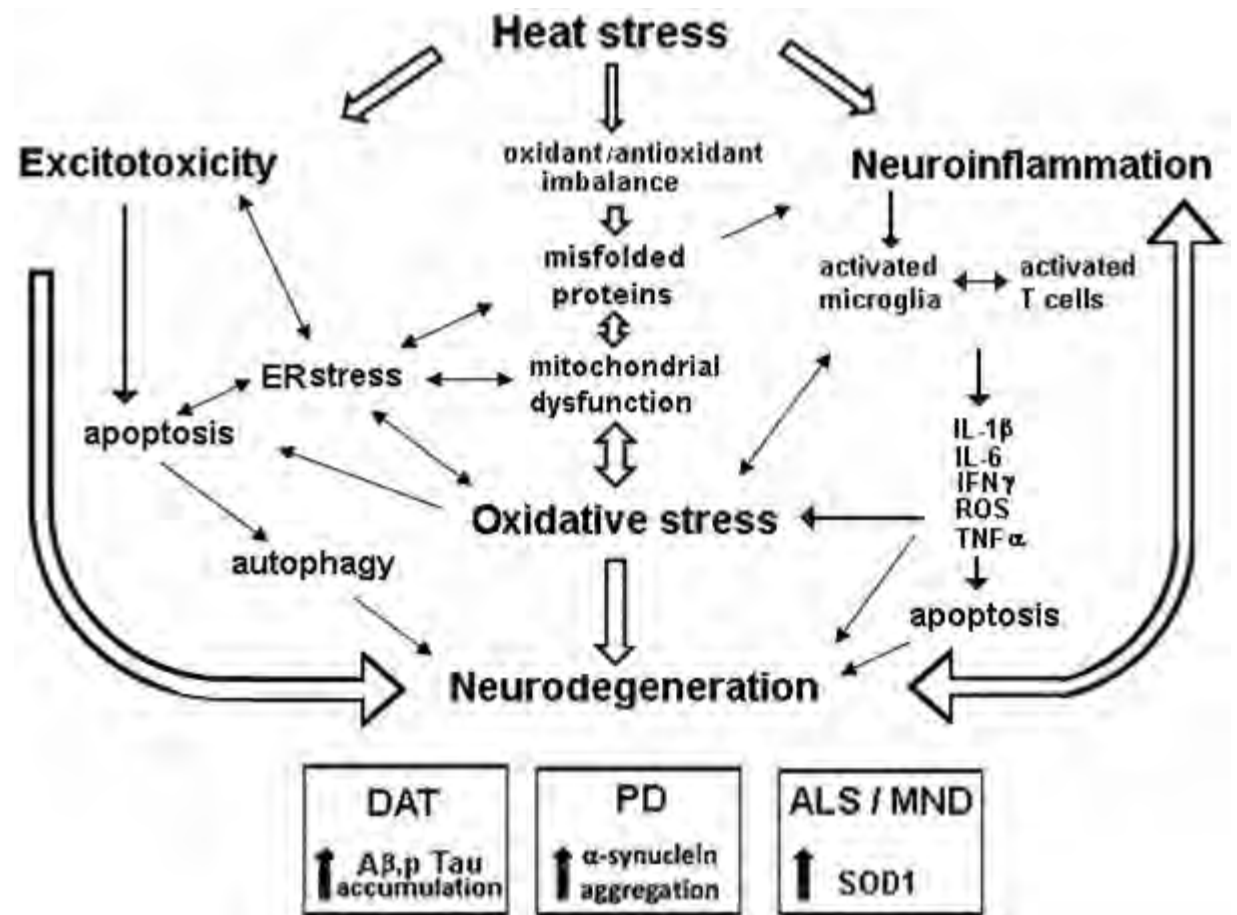


Luis et al. Neurology 2023





Zammit et al. Early Hum Dev 2021



Bongioanni et al. Env Res 2021

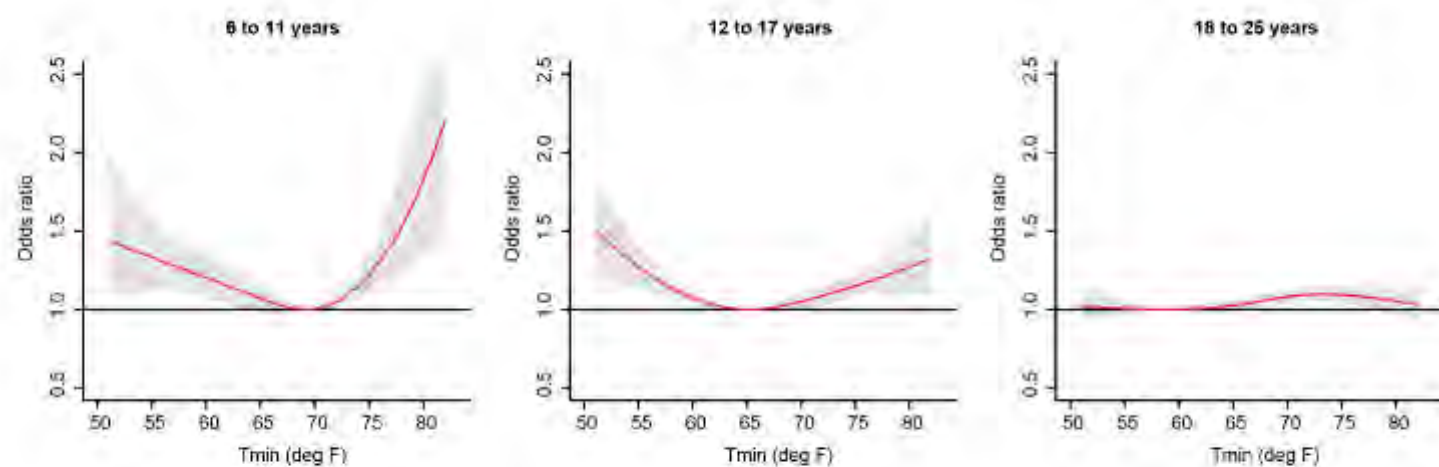
# Higher vulnerability

- The climate crisis worsens existing **inequalities** and disproportionately impacts those with **pre-existing** mental illness and other **structural vulnerabilities**.
- **The elderly, women and children** worldwide are particularly vulnerable to climate-related mental distress, which includes feelings of betrayal and other negative emotions associated with inadequate governmental response to the crisis



# Perspectives

- Earlier evidence focused more on climate attributes and self-reported psychology while recent studies focused on mental and behavioral related **morbidity**
- Methodological gaps include **heterogeneity in climate measures**, assessment of **nonlinear effects** and **co-exposure scenarios**



**Figure 1.** Cumulative odds ratio and 95% confidence intervals of mental health-related ED and hospital admissions associated with daily minimum temperature over lag 0–5 days, June to August.



# Air pollution – Greenness – Light at night

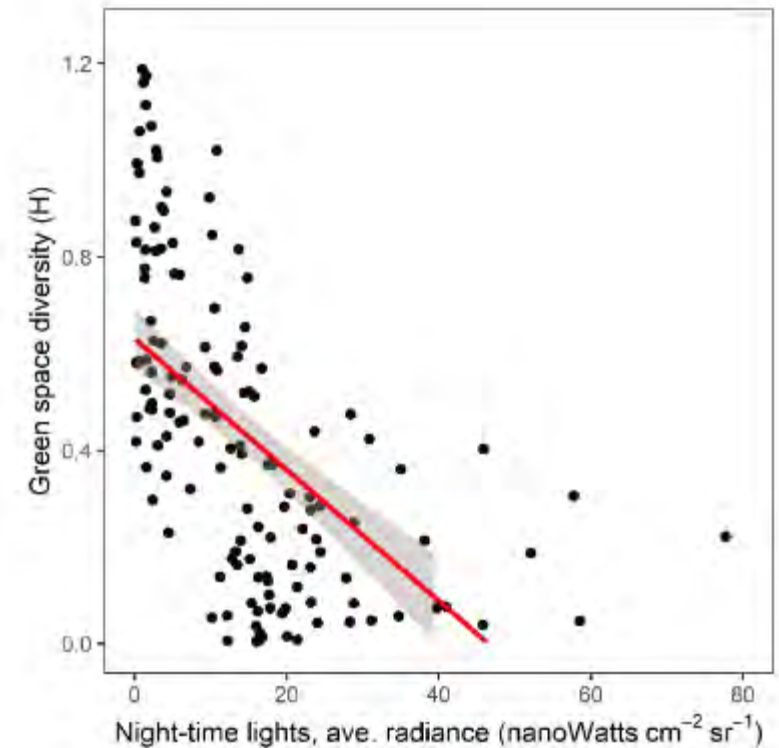
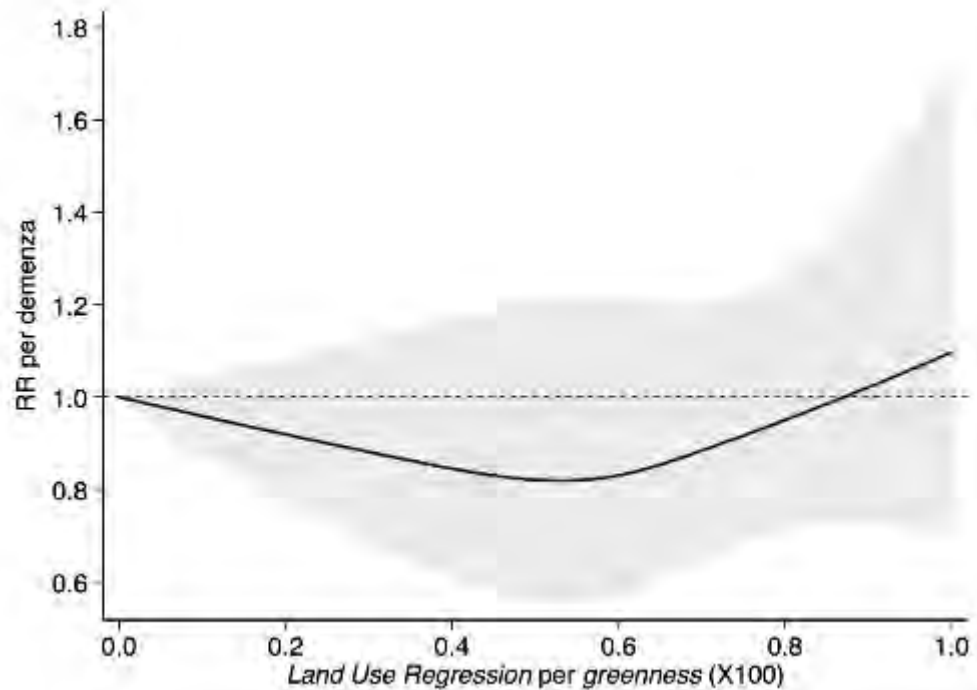
Environmental Research 197 (2021) 111012

Current Environmental Health Reports (2022) 9:574–590  
<https://doi.org/10.1007/s40572-022-00365-5>

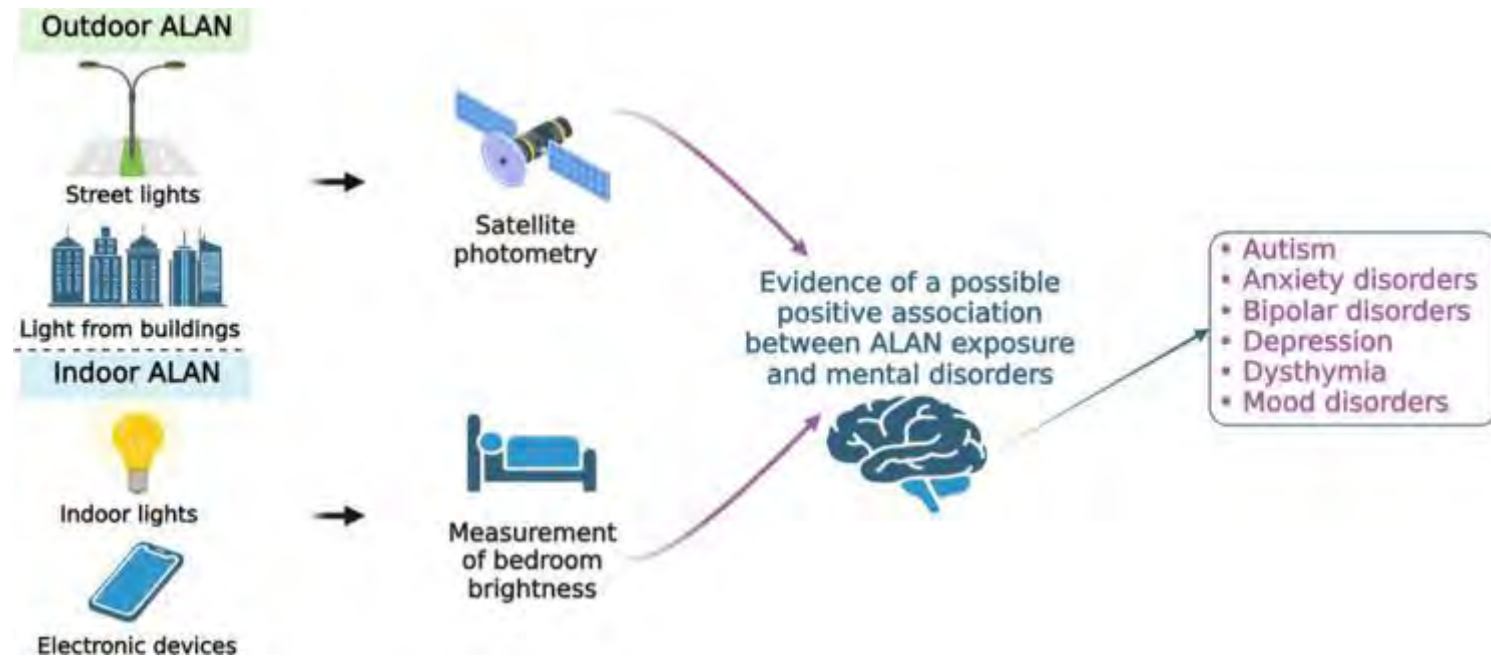
FOOD, HEALTH, AND THE ENVIRONMENT (KE NACHMAN AND D LOVE, SECTION EDITORS)

## Is Greenness Associated with Dementia? A Systematic Review and Dose–Response Meta-analysis

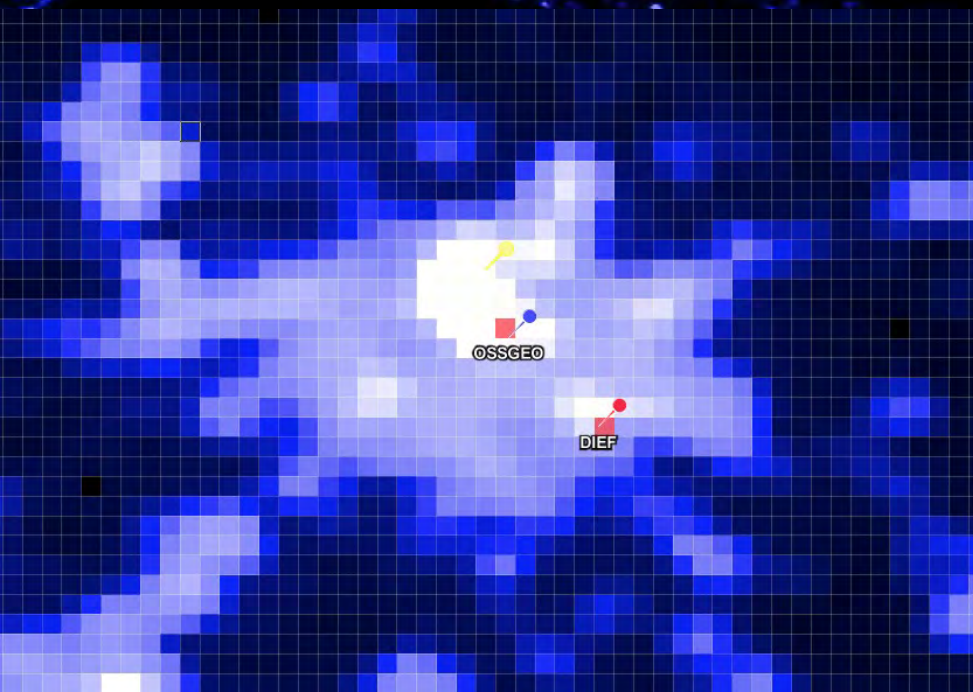
Federico Zagnoli<sup>1</sup> · Tommaso Filippini<sup>1,2</sup> · Marcia P. Jimenez<sup>2</sup> · Lauren A. Wise<sup>3</sup> · Elizabeth E. Hatch<sup>2</sup> · Marco Vinceti<sup>1,3</sup>



# Lighting or light-at-night

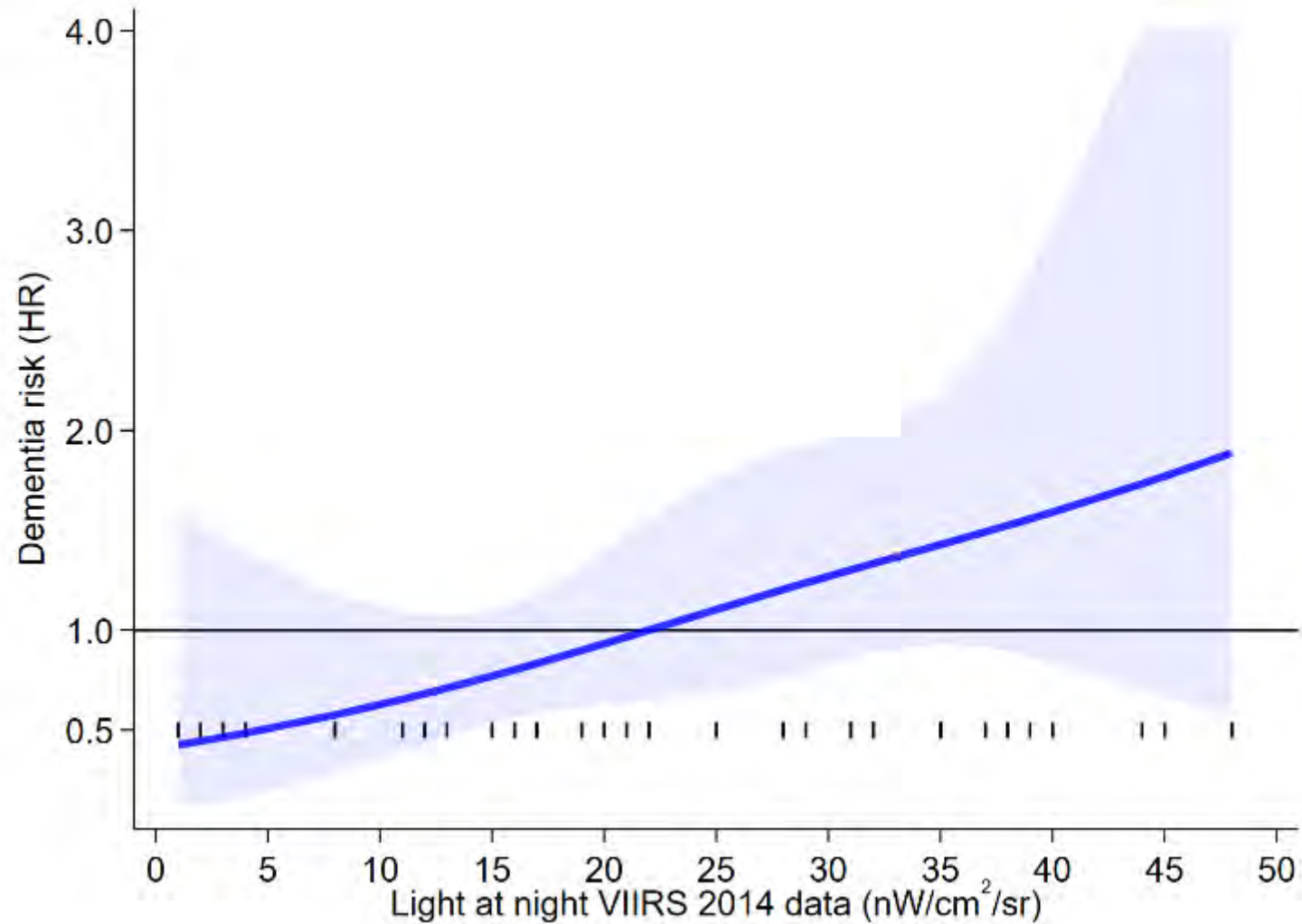








# LAN & progression from MCI to dementia



Adjusted by sex, age, education and PM<sub>10</sub>

# Earth hour





**On the earth, even in the darkest night, the light never wholly  
abandons his rule. It is diffused and subtle, but little as may  
remain, the retina of the eye is sensible of it.  
Jules Verne. Journey to the Center of the Earth**





