WHAT IS A SYNDEMIC?

Syndemics: synergistic epidemics (Singer, 1992)

Multiple health problems:
1. Cluster
2. Synergistically interact
3. In specific socio-environmental contexts

WHY DO WE USE THAT?

- Embraces the complexity
- Allows bio-bio & bio-social interactions
- Focus on structural root causes
- Both problems share common drivers
- Experience and embodiment

OBJECTIVE

To identify and quantify a potential syndemic involving air pollution, physical inactivity and cognitive decline.

Theoretical background:
- Air pollution & Physical inactivity (Ding & Elbarbary, 2021)
- Brain Syndemics (Singer, 2021)

HYPOTHESIS

Air pollution and physical (in)activity, when occurring concurrently, exacerbate each other's negative effects on cognitive health, particularly in low SES subgroups.

Socio-environmental factors

Air Pollution

Synergistic Interactions

Physical Inactivity

Higher Burden of Cognitive Decline
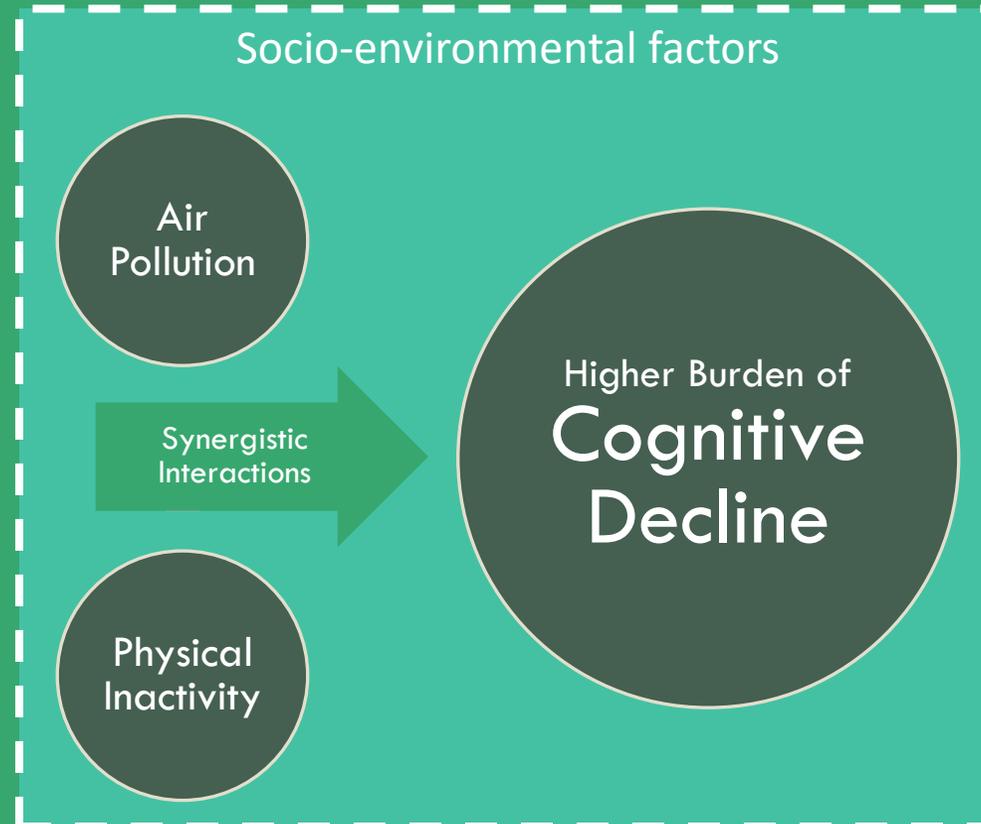
Investigating Syndemics of Air Pollution, Physical Inactivity and Cognitive Decline

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METHODS

DATA
- Outcome – HCAP Cognitive measures
- Exposures – NICOLA Wave 2
- Confounders – NICOLA Wave 1

ANALYSIS
(VanderWeele & Knol 2014; Rothman, 1986)
- *Additive interaction*: The risk of two exposures combined is greater than the sum of their individual effects.
- *Multiplicative interaction*: The risk of two exposures combined is greater than the product of their individual effects
- *Regression models*: confounder adjustment

IMPLICATIONS

- Intervention design/resource allocation
- Addressing structural inequalities
- Quantitative evidence for syndemics theory