

Long-term Exposure to Multiple Environmental Factors and Late-Life Cognitive Decline

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Abstract
#1587



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KEY TAKE-HOME MESSAGE

Reducing exposure to summer temperature and light at night, and increasing residential greenness, may help maintain cognitive function and slow cognitive aging, which is also more favorable in higher socioeconomic neighborhoods.

BACKGROUND AND AIMS

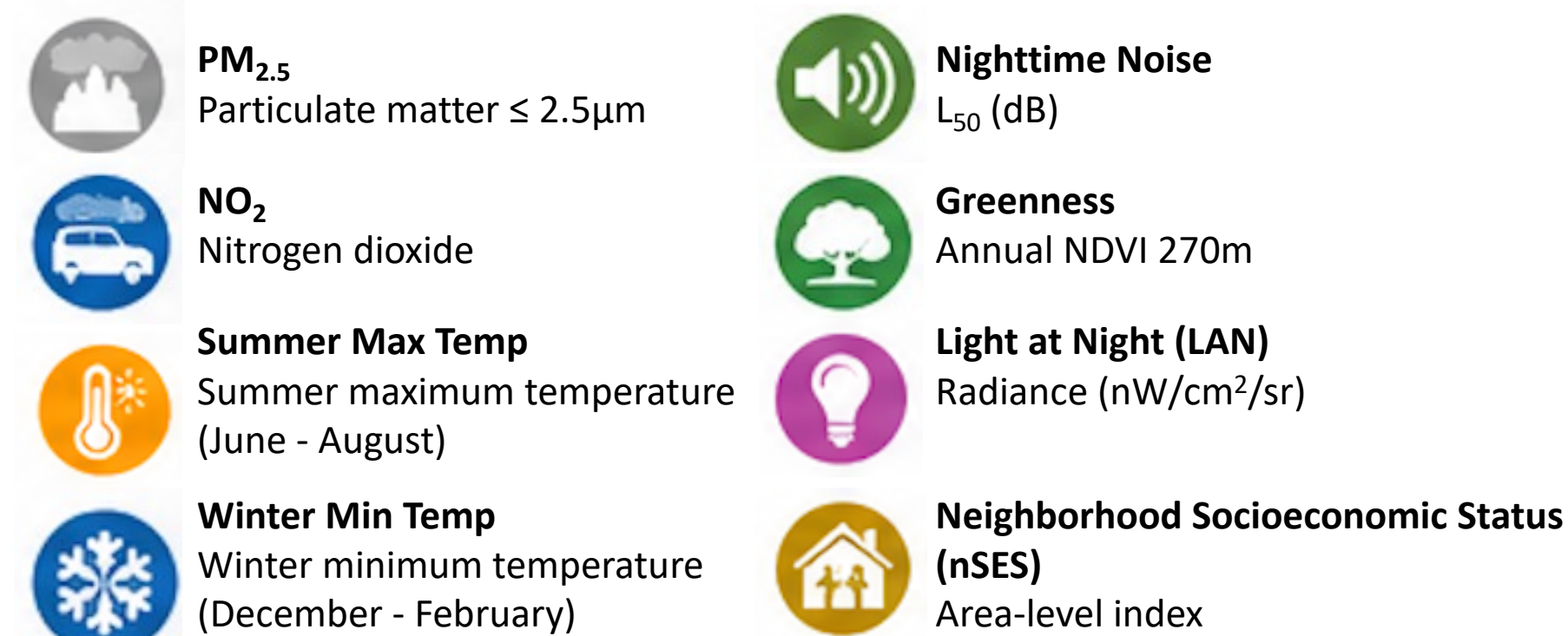
- Individual environmental exposures have been linked to later-life cognition.
- Limited evidence exists on environmental mixtures and cognitive decline.
- We aimed to assess the independent and joint associations of long-term exposure to multiple environmental factors on cognitive decline.

METHODS

- Study Population**
18,462 women from the Nurses' Health Study cognitive substudy, with a mean age of 74 years at baseline, each completing up to four cognitive assessments until 2008.

Environmental Exposures

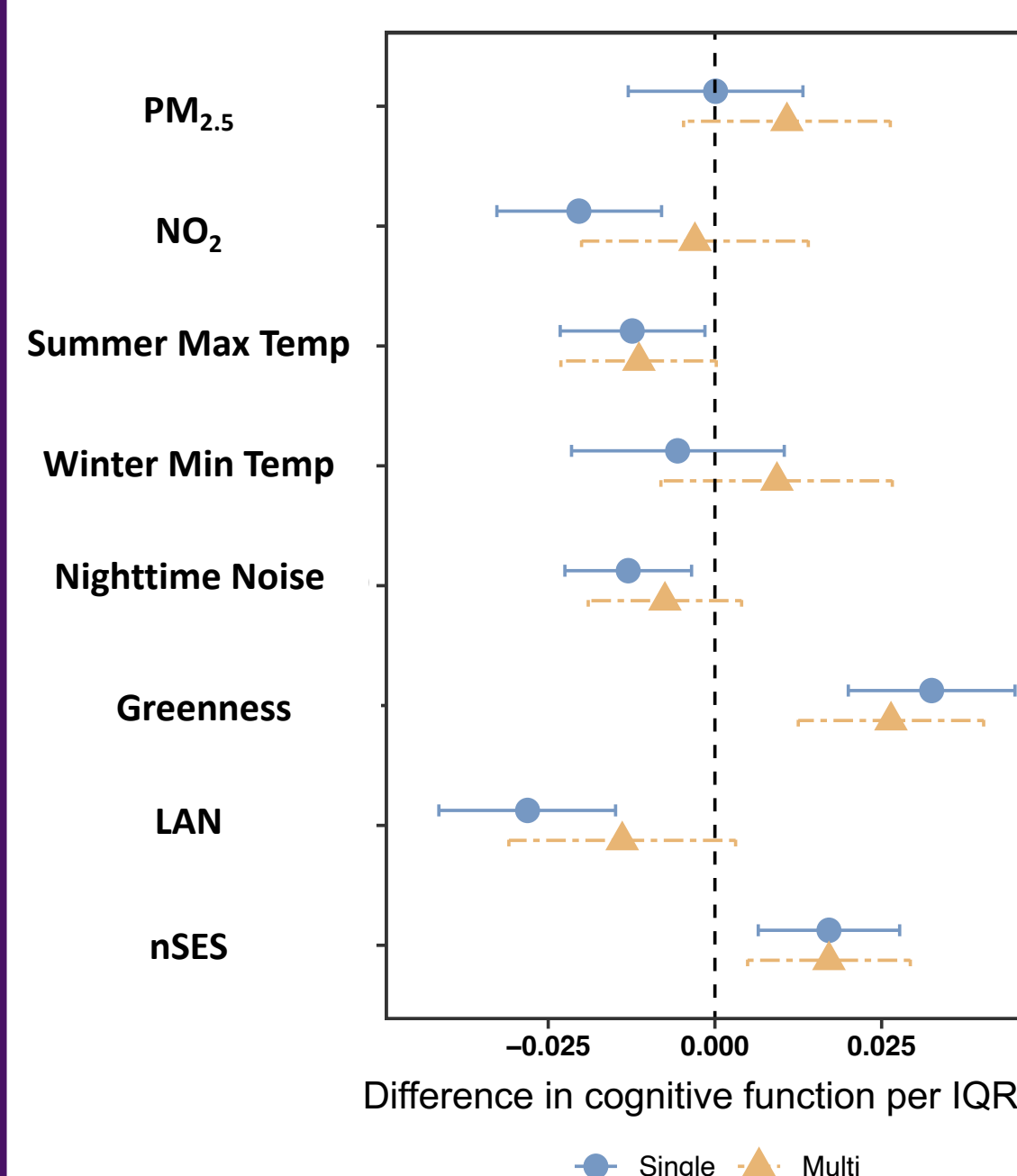
Cumulative exposure from 1988 onward



Statistical Analyses

Single- and Multi-exposure generalized estimating equations (GEE) models.
Quantile g-computation (QGcomp) for joint effect.

MAIN RESULTS 1: COGNITIVE FUNCTION



Summer Temperature
-0.011 (-0.023, 0.000) per IQR
≈ 3 months cognitive older

Greenness
0.026 (0.013, 0.040) per IQR
≈ 7 months cognitive younger

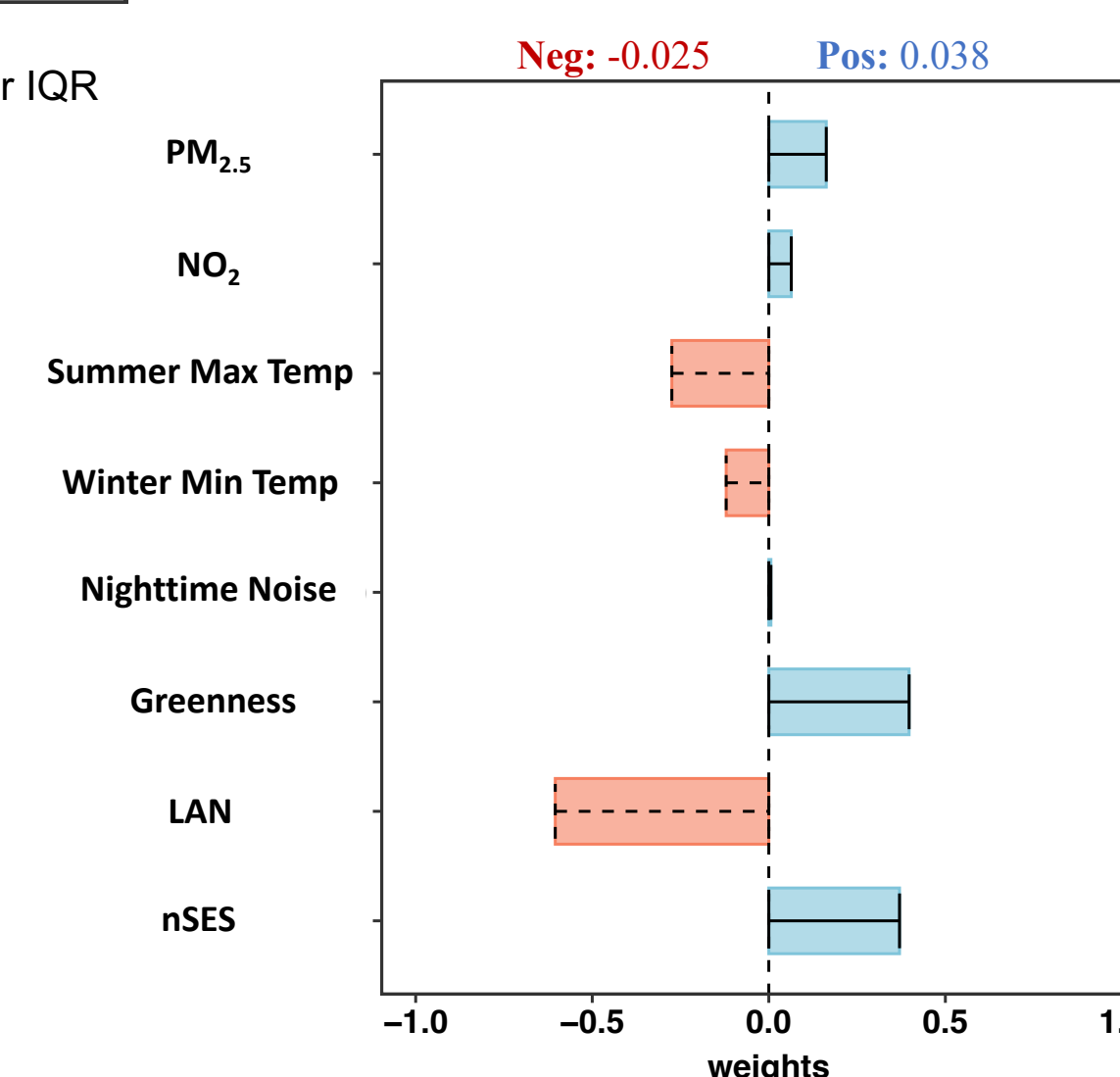
nSES
0.017 (0.005, 0.029) per IQR
≈ 5 months cognitive younger

Overall mixture effect

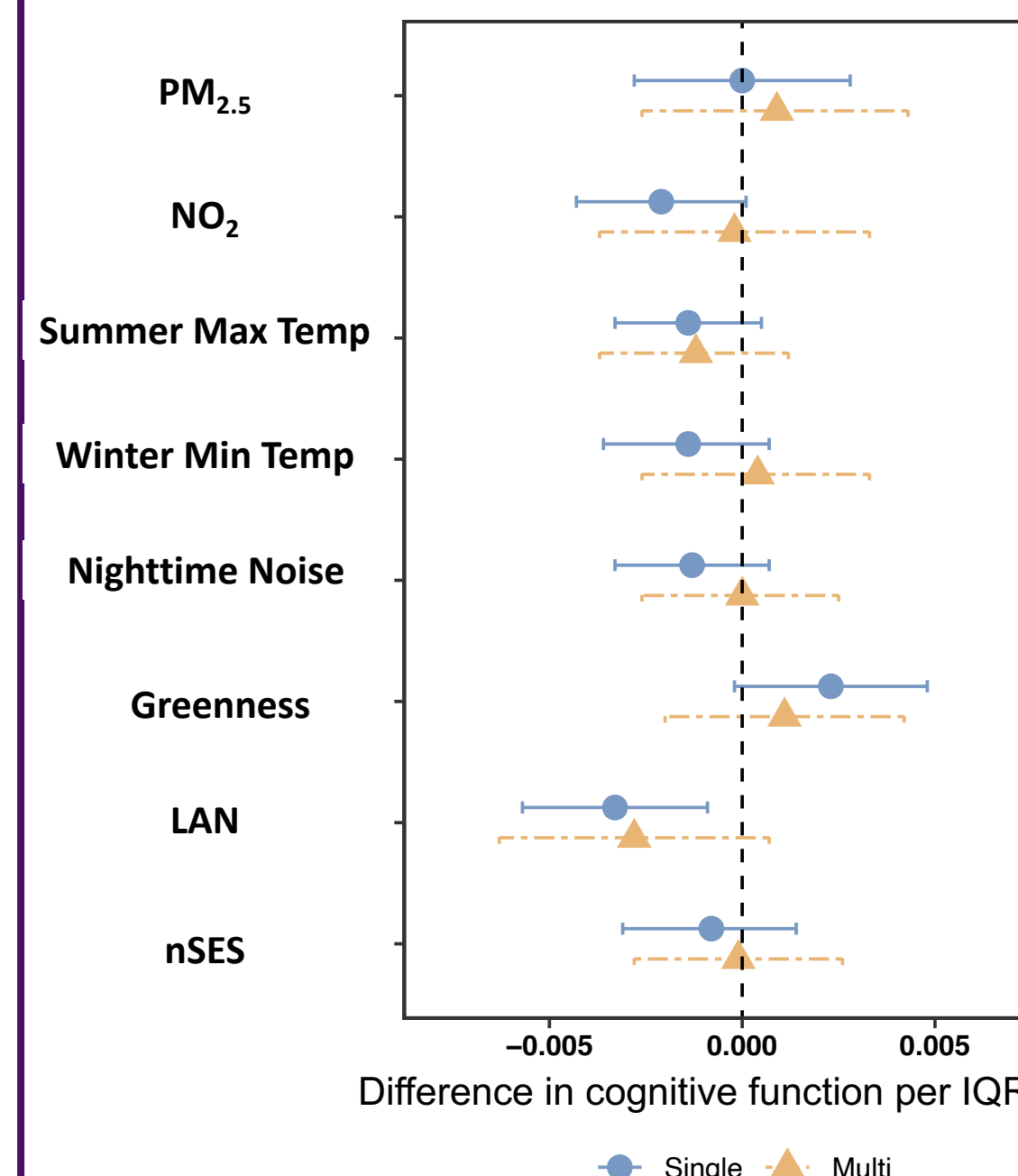
$$\beta = 0.013$$

(95% CI: 0.001, 0.024)

Per quartile increase in the environmental mixture



MAIN RESULTS 2: COGNITIVE DECLINE



Only in single-exposure models

Higher summer temperature and LAN were associated with faster cognitive decline

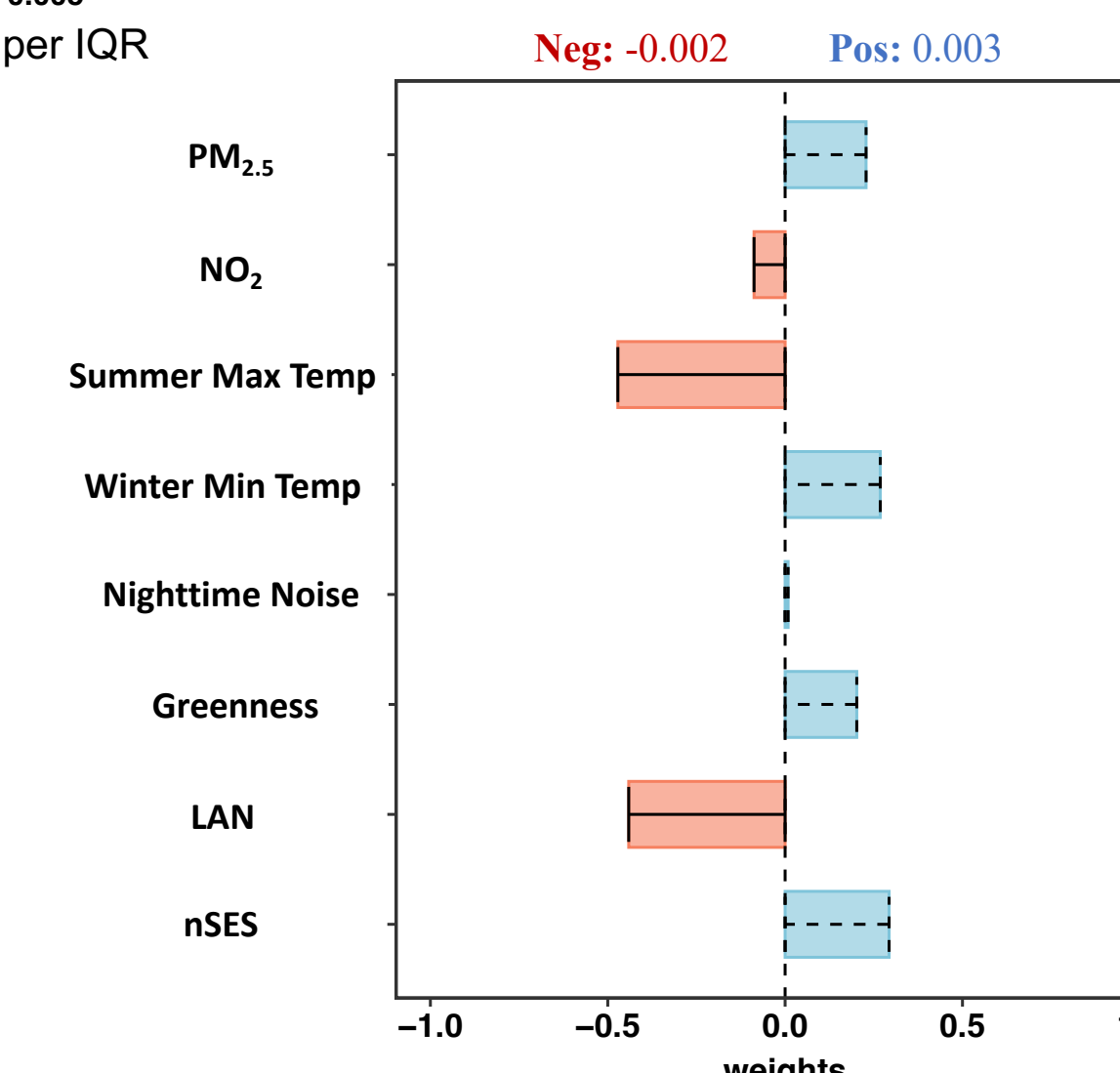
Higher greenness and nSES were associated with slower cognitive decline

Overall mixture effect

$$\beta = 0.001$$

(95% CI: -0.001, 0.002)

Per quartile increase in the environmental mixture



CONCLUSION



In mixture analyses, protective exposures (greenness, nSES) overwhelmed harmful exposures (summer temperature, LAN) for cognitive health.

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