

Multiple Environmental Exposures and Acute Coronary Syndrome and Mortality



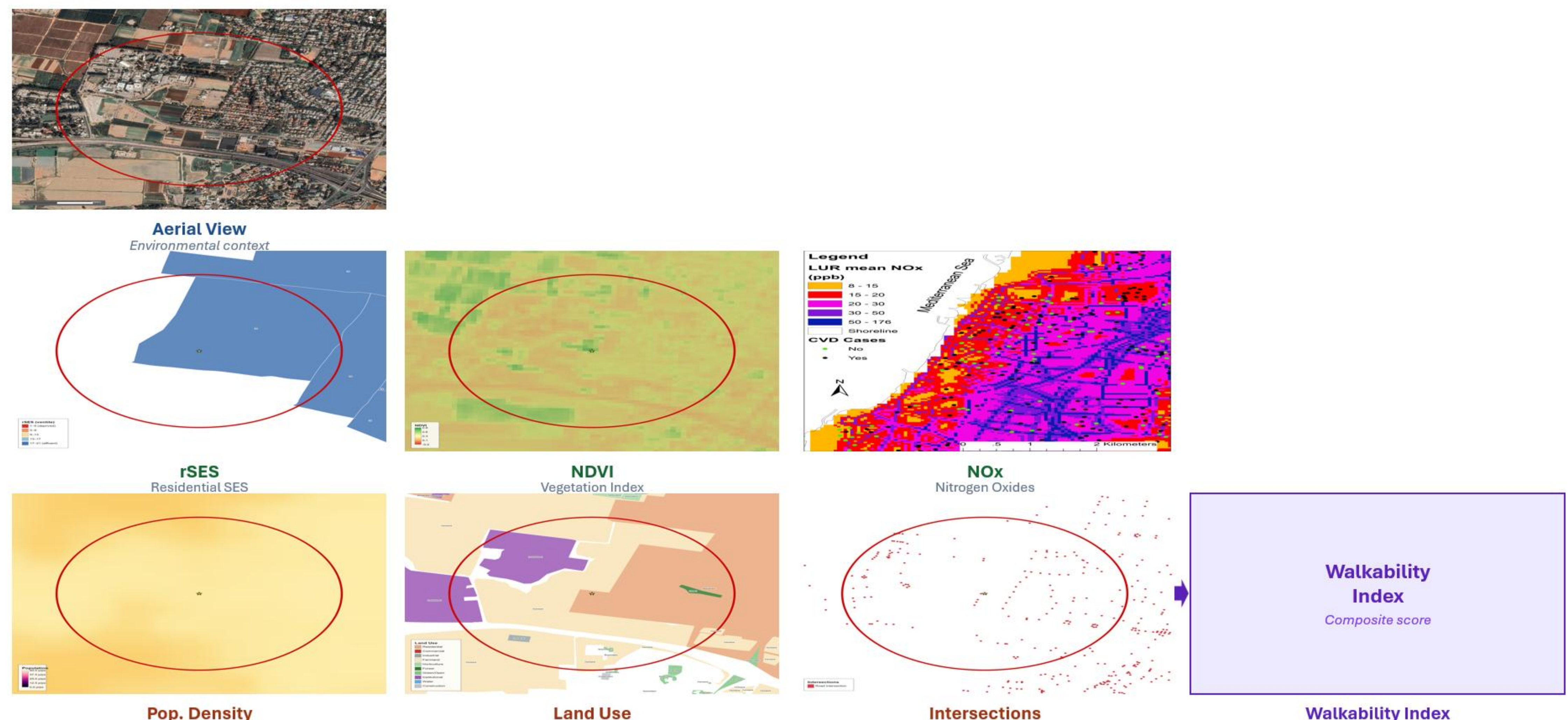
Saar Ashri, Gali Cohen, Lital Keinan-Boker, Osnat Itzhaki Ben Zadok,
Itamar Shafran, David M Broday, David M Steinberg, Tamir Bental, Ran Kornowski, Yariv Gerber

Introduction

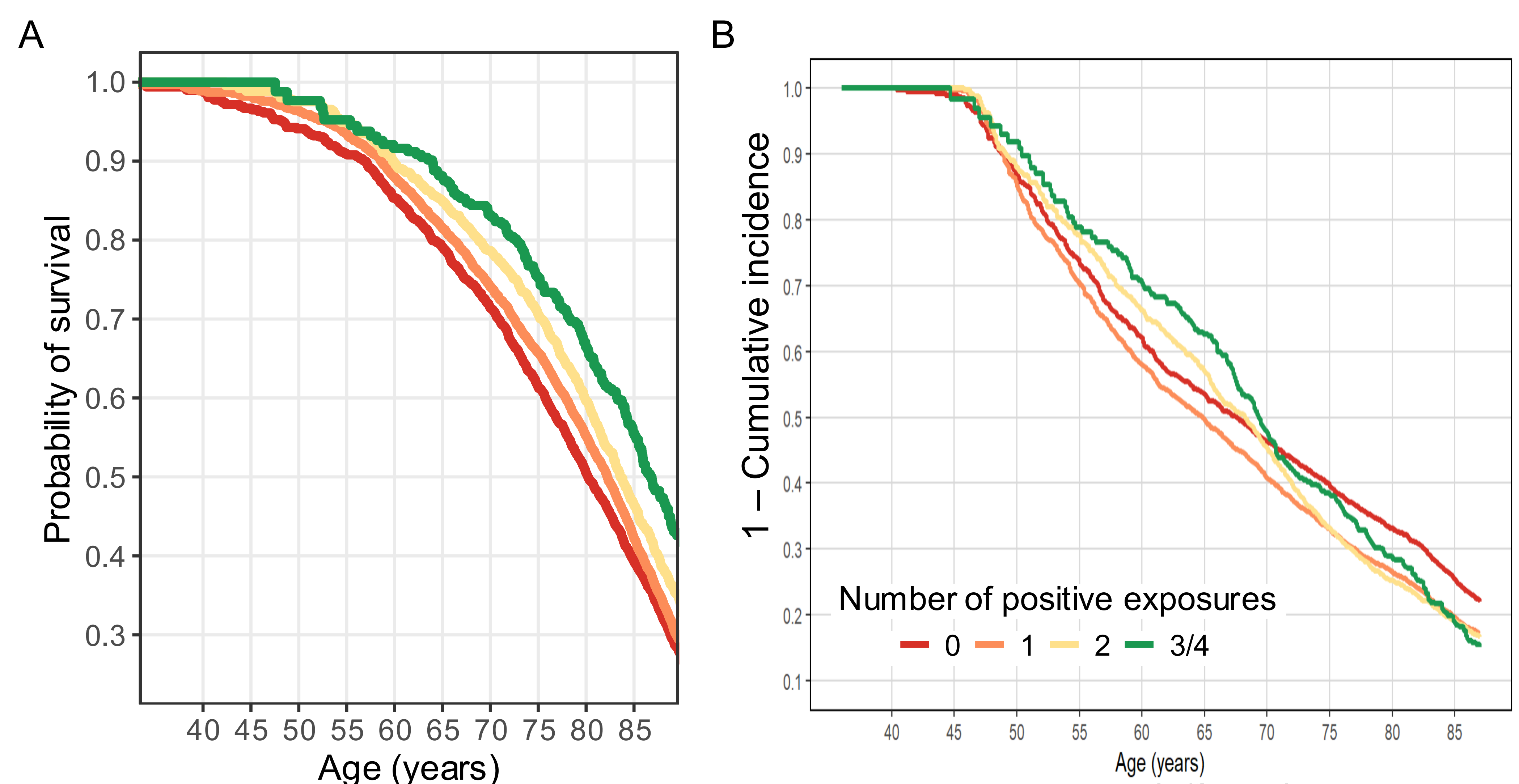
The impact of a cumulative favorable environment on ACS incidence, recurrence, and mortality remains unclear. We evaluated a multi-exposure scale across the cardiovascular risk spectrum.

Methods

- Four cohorts pooled (N=17,216): two ACS registries (1992–1993; 2004–2014) and two national health surveys (1999–2001; 2005–2006; excluding prevalent cardiovascular disease).
- Four residential exposures were assessed: greenness (NDVI, satellite-derived), traffic-related air pollution (NO_x, land use regression model), residential socioeconomic status (rSES, census-based), and walkability (GIS-based). We constructed a cumulative score (0–4) counted exposures in the most favorable quartile.
- Outcomes: all-cause mortality and ACS hospitalization (Ministry of Health, through December 2021); incident ACS in survey participants, recurrent ACS in registry patients.
- Cox regression (age as time scale), adjusted for sociodemographic and clinical confounders; effect modification by prior ACS status evaluated.
- During a median of 15.6 years; 6,359 (42.7%) deaths and 5,402 (36.3%) ACS events recorded.



A. Kaplan-Meier Estimators for Survival by Number of Positive Exposures; B. Cumulative Incidence of Acute Coronary Syndrome by Number of Positive Exposures



Conclusions

- A higher number of favorable environmental exposures was associated with lower risk of mortality
- It was also associated with recurrent ACS, but not with incident events.
- These findings support the role of a favorable environment in secondary prevention of ACS.

HRs (95% CIs) for mortality and ACS associated with cumulative number of positive exposures, by CHD.

	Total		CHD		No CHD	
# positive exposures	N/Events	HR (95% CI)	N/Events	HR (95% CI)	N/Events	HR (95% CI)
All-cause Mortality			p-for-interaction = .35			
0	4,229 / 2,032	1 (Ref.)	3,330 / 1,778	1 (Ref.)	899 / 254	1 (Ref.)
1	7,168 / 3,055	0.95 (0.89, 1.00)	5,596 / 2,645	0.95 (0.89, 1.01)	1,572 / 410	0.94 (0.81, 1.11)
2	2,823 / 1,063	0.92 (0.85, 0.99)	2,230 / 920	0.92 (0.85, 1.00)	593 / 143	0.86 (0.72, 1.10)
3/4	667 / 209	0.79 (0.69, 0.92)	491 / 169	0.83 (0.71, 0.97)	176 / 40	0.68 (0.48, 0.96)
p-for-trend	< .005		< .005		< .05	
ACS Incidence/recurrence			p-for-interaction = .09			
0	4,229 / 1,589	1 (Ref.)	3,330 / 1,509	1 (Ref.)	899 / 80	1 (Ref.)
1	7,168 / 2,635	0.96 (0.90, 1.02)	5,596 / 2,490	0.96 (0.89, 1.02)	1,572 / 145	1.08 (0.82, 1.43)
2	2,823 / 973	0.90 (0.83, 0.97)	2,230 / 916	0.89 (0.81, 0.96)	593 / 57	1.20 (0.84, 1.70)
3/4	667 / 205	0.84 (0.73, 0.97)	491 / 186	0.82 (0.70, 0.95)	176 / 19	1.29 (0.78, 2.16)
p-for-trend	< .005		< .005		.22	

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