**Higher daily air temperature is associated with shorter leukocyte telomere length: KORA F3 and KORA F4**

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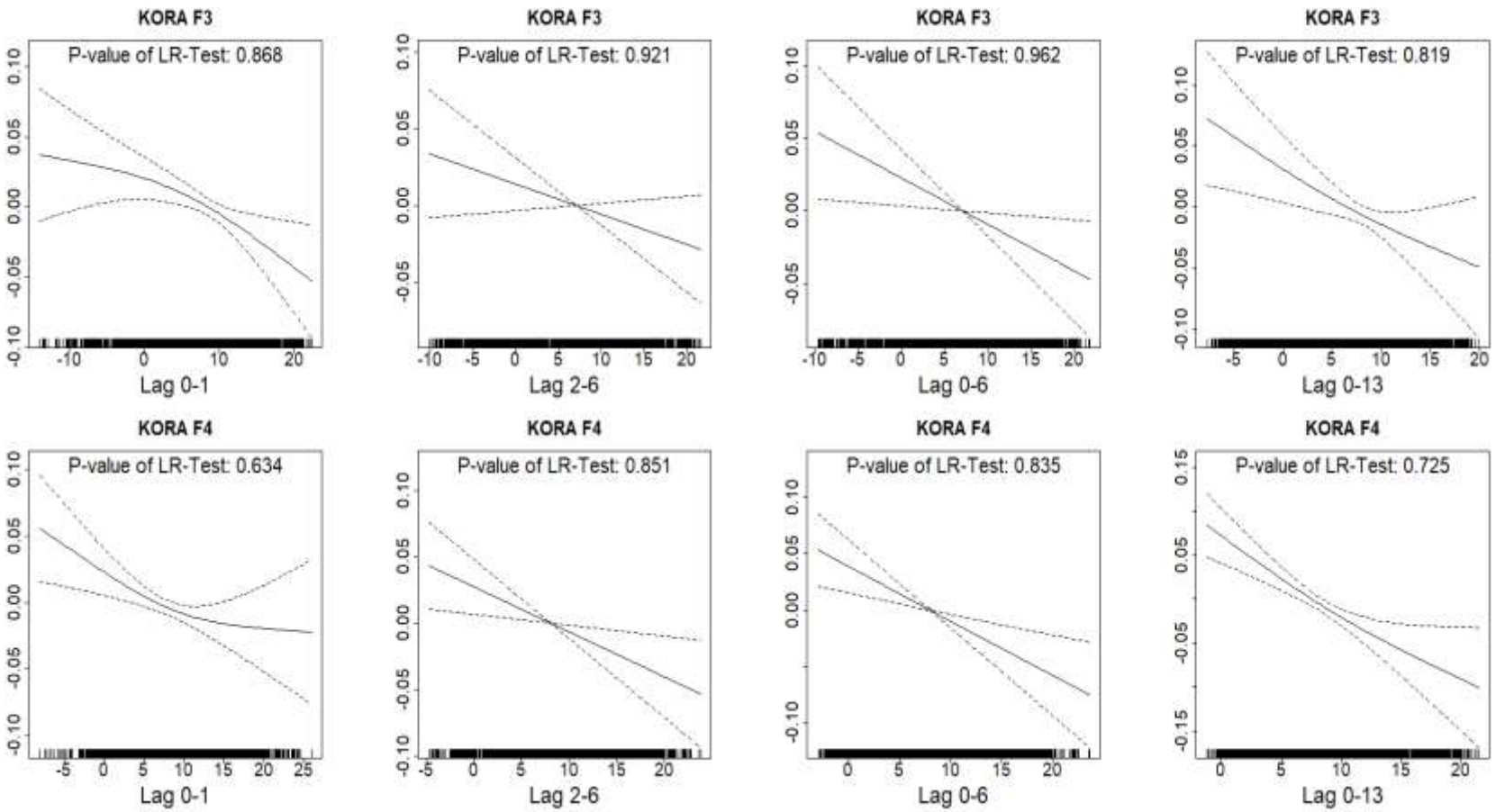


**Figure S1. Exposure-response functions of air temperature and leukocyte telomere length at lags 0-1, 2-6, 0-6, and 0-13 days.**

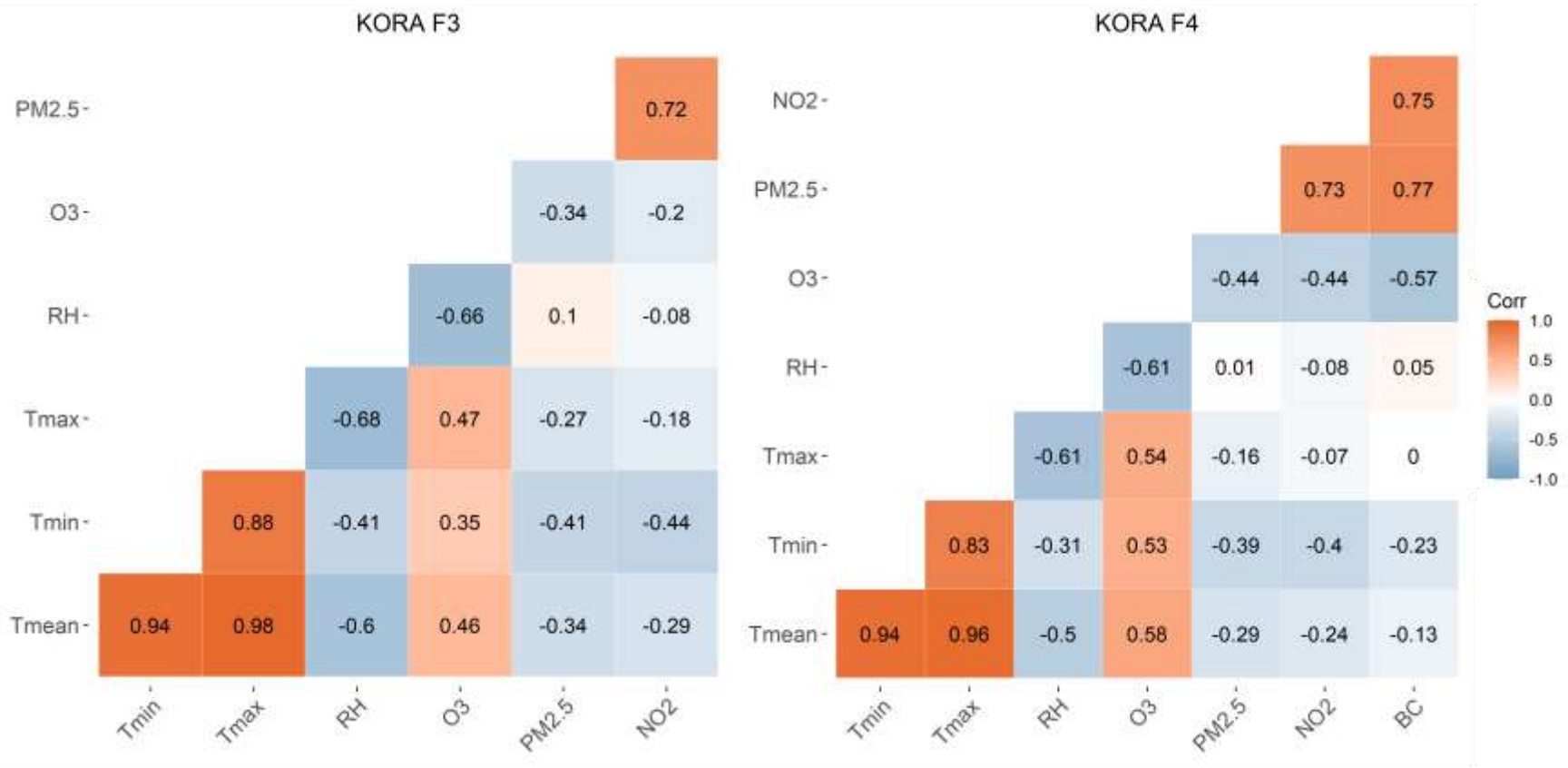


**Figure S2. Spearman correlation coefficients (r) between meteorological variables and air pollutants.**

*Tmean***:** daily mean temperature; *Tmin*: daily minimum temperature; *Tmax*: daily maximum temperature; *RH*: relative humidity; $O_3$*:* ozone; $PM_{2.5:}$ particulate matter with an aerodynamic diameter of ≤2.5 µm; $NO_2$: nitrogen dioxide; *BC*: black carbon.

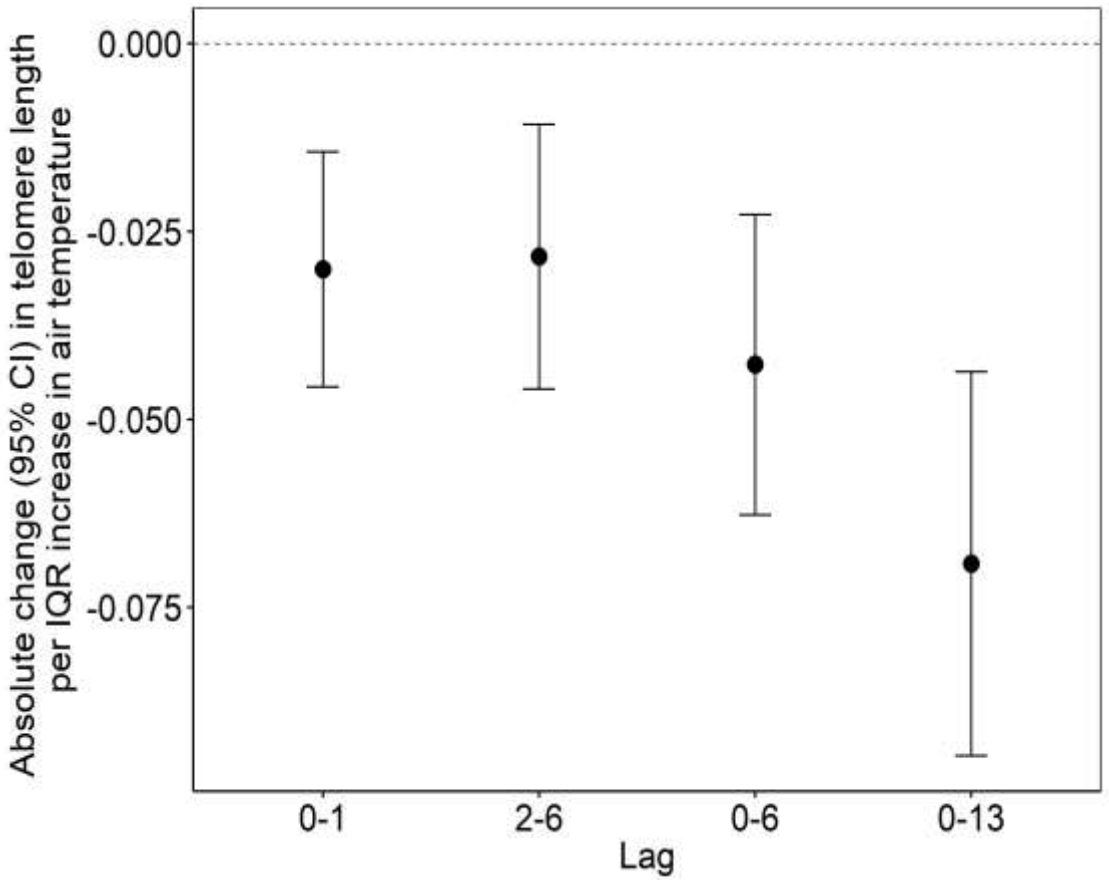


**Figure S3. Estimated effects (absolute change [95% CI]) of air temperature on leukocyte telomere length between individuals at lags 0-1, 2-6, 0-6, and 0-13 days per IQR increase in air temperature.**

Generalized additive models were adjusted for age, sex, BMI, education, smoking status, alcohol consumption, physical activity, day of the week, season, time trend (cubic spline with ten degrees of freedom), and relative humidity with the same lag period as the air temperature. Effect estimates were presented as absolute changes with 95% CIs per IQR increase in air temperature. The respective IQR increases were 10.77°C for lags 0-1 days, 10.11°C for lags 2-6 days, 10.15°C for lags 0-6 days, and 9.54°C for lags 0-13 days.

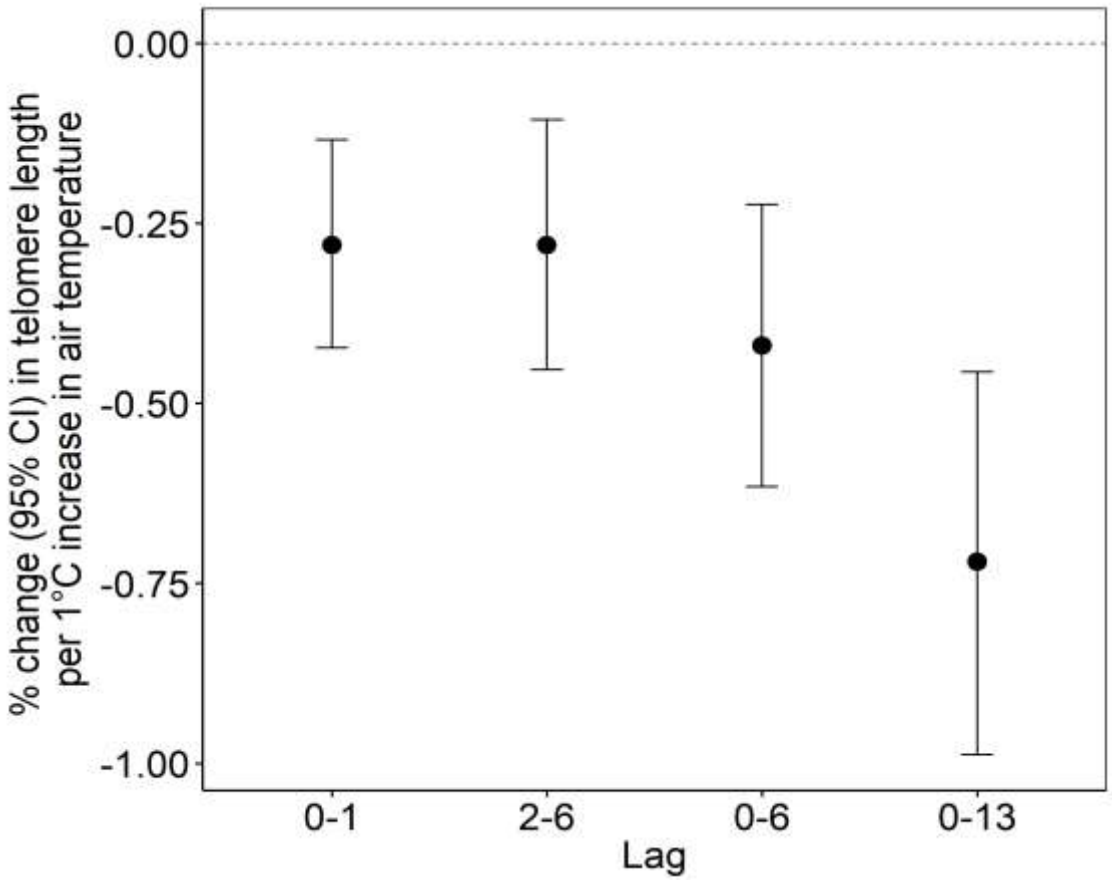


**Figure S4. Estimated effects (percent change [95% CI] of geometric mean) of air temperature on leukocyte telomere length between individuals at lags 0-1, 2-6, 0-6, and 0-13 days per 1°C increase in air temperature.**

Generalized additive models were adjusted for age, sex, BMI, education, smoking status, alcohol consumption, physical activity, day of the week, season, time trend (cubic spline with ten degrees of freedom), and relative humidity with the same lag period as the air temperature. Effect estimates were presented as percent changes of the geometric outcome mean with 95% CIs per 1°C increase in air temperature. Heterogeneity testing across KORA F3 and KORA F4: lag 0-1, $I^2 = 0$, P = 0.71; lag 2-6, $I^2 = 0$, P = 0.44; lag 0-6, $I^2 = 0$, P = 0.42; lag 0-13, $I^2 = 13.46$, P = 0.28.

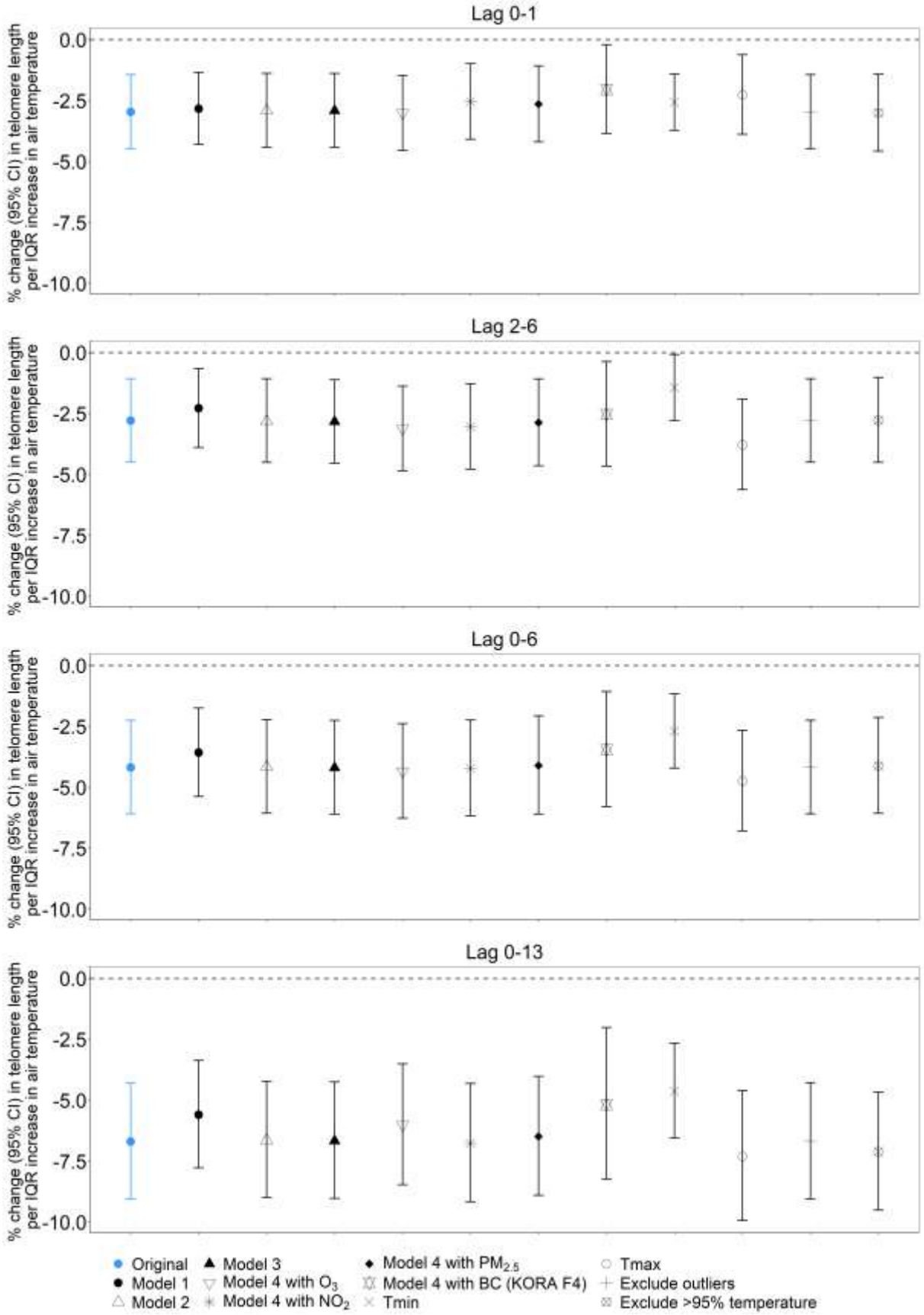
Lag 0-1
Lag 2-6
Lag 0-6
Lag 0-13
% change (95% CI) in telomere length per IQR increase in air temperature
0.0
-2.5
-5.0
-7.5
-10.0
Original
Model 1
Model 2
Model 3
Model 4 with $O_3$
Model 4 with $NO_2$
Model 4 with $PM_{2.5}$
Model 4 with BC (KORA F4)
Tmin
Tmax
Exclude outliers
Exclude >95% temperature

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**Figure S5. Sensitivity analysis: Estimated effects (percent change [95% CI] of geometric mean) of air temperature on leukocyte telomere length between individuals at lags 0-1, 2-6, 0-6, and 0-13 days per IQR increase in air temperature.**

Effect estimates were presented as percent changes of the geometric outcome mean with 95% CIs per IQR increase in air temperature. *Original*: main model; *Model 1*: only adjusted for age, sex, BMI, day of the week, time trend and relative humidity; *Model 2:* Main model additionally adjusted for total cholesterol, triglyceride, LDL, and HDL. *Model3:* Model 2 additionally adjusted for medication intake (antihypertensive, lipid-lowering, or antidiabetic medication); *Model 4 with* $O_3$: Model 3 additionally adjusted for $O_3$ with the same lag period as the air temperature; *Model 4 with* $NO_2$: Model 3 additionally adjusted for $NO_2$ with the same lag period as the air temperature; *Model 4 with* $PM_{2.5}$: Model 3 additionally adjusted for $PM_{2.5}$ with the same lag period as the air temperature; *Model 4 with BC*: Model 3 additionally adjusted for BC with the same lag period as the air temperature (KORA F4); *Tmin*: daily minimum temperature; *Tmax*: daily maximum temperature. *Exclude outliers:* leukocyte telomere length values less than the first quartile of the data (Q1) - 1.5 × IQR or more than the third quartile of the data (Q3) + 1.5 × IQR were excluded. *Exclude >95% temperature:* subjects exposed to air temperature greater than 95% of temperature were excluded.