Supplemental Material

Long-Term Exposure to Ambient Air Pollution and Mortality among Four Million COVID-19 Cases in Italy: The EpiCovAir Study

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Table S5. Effect of air pollutants on mortality in the three different waves of the COVID-19 pandemic, by individual-level covariates and geographical area: percent increases of risk (%IR), and 95% Confidence Intervals (95% CI), per 1 µg/m^3 increment in air pollutants. Italy, February 20, 2020 – June 15, 2021 (first wave: n=201,210 COVID-19 cases, n=35,440 deaths; second wave: n=1,534,950 COVID-19 cases, n=41,620 deaths; third wave: n=2,259,042 COVID-19 cases, n=47,286 deaths). Results from the main model, adjusted for interaction terms between month, province, age, sex, and ventiles of the generalized propensity score.

Table S6. Results of the two-pollutant models: percent increases of risk (%IR), and 95% Confidence Intervals (95% CI), per 1 µg/m^3 increment in air pollutants. Italy, February 20, 2020 – June 15, 2021 (n=3,995,202 COVID-19 cases, n=124,346 deaths). Results from the main model, adjusted for interaction terms between month, province, age, sex, and ventiles of the generalized propensity score.

Figure S1. Flow-chart of data selection.

Figure S2. Map of COVID-19 case-fatality rates by municipality in the three different pandemic waves: 20/02/2020 – 31/05/2020, 15/09/2020 – 15/12/2020 and 16/12/2020 – 15/06/2021.

Figure S3. Map of COVID-19 hospitalization rates (left) and usage of intensive care units (ICU) rates (right) by municipality, Italy 20/02/2020 – 31/05/2020 and 15/09/2020 – 15/06/2021.

Figure S4. Map of air pollution levels (mean 2016-2019) by municipality in Italy.

Figure S5. Generalized Propensity Score (GPS) based on 4 selected principal components (PC): distribution of GPS by quintiles of exposure (positivity assumption (left) and absolute correlation between exposure and covariates pre- and post-GPS (balancing plot, right). Relevant data on mean absolute correlations in Excel Table S3.

Figure S6. Generalized Propensity Score (GPS) based on all 12 principal components (PC): distribution of GPS by quintiles of exposure (positivity assumption (left) and absolute correlation between exposure and covariates pre- and post-GPS (balancing plot, right). Relevant data on mean absolute correlations in Excel Table S4.

Figure S7. Generalized Propensity Score (GPS) based on selected contextual variables: distribution of GPS by quintiles of exposure (positivity assumption (left) and absolute correlation between exposure and covariates pre- and post-GPS (balancing plot, right). Relevant data on mean absolute correlations in Excel Table S5.

Additional File- Excel Document