

**Note to readers with disabilities:** *EHP* strives to ensure that all journal content is accessible to all readers. However, some figures and Supplemental Material published in *EHP* articles may not conform to [508 standards](#) due to the complexity of the information being presented. If you need assistance accessing journal content, please contact [ehp508@niehs.nih.gov](mailto:ehp508@niehs.nih.gov). Our staff will work with you to assess and meet your accessibility needs within 3 working days.

### **Supplemental Material**

#### **Short-Term Exposure to Ambient Air Pollution and Influenza: A Multicity Study in China**

Lin-Jie Yu, Xin-Lou Li, Yan-He Wang, Hai-Yang Zhang, Shi-Man Ruan, Bao-Gui Jiang, Qiang Xu, Yan-Song Sun, Li-Ping Wang, Wei Liu, Yang Yang, and Li-Qun Fang

#### **Table of Contents**

**Table S1.** Distribution of daily average temperature and relative humidity in 82 cities in China, 2015–2019.

**Table S2.** Distribution of daily average concentrations of PM<sub>2.5</sub> and PM<sub>10</sub> in 82 cities in China, 2015–2019.

**Table S3.** Distribution of daily average concentrations of NO<sub>2</sub> and SO<sub>2</sub> in 82 cities in China, 2015–2019.

**Table S4.** Distribution of daily average concentrations of CO and O<sub>3</sub> in 82 cities in China, 2015–2019.

**Table S5.** Detailed information of data sources used in this study on the association between influenza and air pollution in 82 cities in China, 2015–2019.

**Table S6.** Data summary of the distribution of daily incidence and distribution of variance/mean ratio for daily counts of influenza case in the 82 Chinese cities.

**Table S7.** Pearson correlation coefficients and p values between daily influenza incidence and air pollutants concentrations.

**Table S8.** Pooled estimates of lag-specific risk ratios and 95% confidence intervals for influenza per 10µg/m<sup>3</sup> increase in the concentration of each air pollutant based on the single-pollutant models.

**Table S9.** City-specific attributable fractions of the air pollutants on influenza based on the single-pollutant model, China 2015–2019.

**Table S10.** City-specific attributable fractions of the air pollutants on influenza based on the multi-pollutant model, China 2015–2019.

**Table S11.** Heterogeneity of the air pollutant effects on influenza incidence across the 82 Chinese cities and how much heterogeneity remains after city-specific characteristics are accounted for, based on the second-stage random effect meta-regression following the first-stage single-pollutant models.

**Table S12.** Median (IQR) of Bayesian information criterion (BIC) values for the linear and nonlinear air pollutant effect models across the 82 Chinese cities.

**Table S13.** Pooled estimates (95% CI) of cumulative risk ratios (CRR) per  $10\mu\text{g}/\text{m}^3$  increase in daily concentrations of the six air pollutants over the lags of 1–7 days in the sensitivity analyses.

**Figure S1.** Time series of daily influenza incidence and air pollutant level averaged over 2015–2019. The red lines represented the median of daily influenza incidence and concentrations of air pollutants and the black lines (top and bottom) represented the IQR (25%, 75%) across the 82 selected cities.

**Figure S2.** Distribution of daily incidence (A) and distribution of variance/mean ratio for daily counts of influenza cases (B) in the 82 Chinese cities.

**Figure S3.** Spatial distribution of city-level annual influenza incidence among (A) children (0–14 years old) and (B) adults ( $\geq 15$  years old) in the mainland of China from 2015 to 2019.

**Figure S4.** Annual median concentrations of air pollutants in the 82 Chinese cities selected for the primary analysis.

**Figure S5.** Pooled estimates of lag-specific risk ratios and 95% confidence intervals per  $10\mu\text{g}/\text{m}^3$  increase in the concentration of each air pollutant based on the single-pollutant models. Natural cubic spline with 3 degrees of freedom was used to model the variation of the linear effect over the lags.

**Figure S6.** Forest plots for the attributable fractions (and 95% confidence intervals) of influenza incidence associated with air pollutant concentrations, using single-pollutant models.

**Figure S7.** Forest plots for the attributable fractions (and 95% confidence intervals) of influenza incidence associated with air pollutant concentrations, using the multi-pollutant model.

**Figure S8.** Correlation between daily concentrations of the six air pollutants during 2015–2019 in the 82 Chinese cities.

**Additional File-** Excel Document & R code