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Supplemental Material

Associations between Source-Specific Fine Particulate Matter and Emergency Department Visits for Respiratory Disease in Four U.S. Cities

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Table of Contents

Figure S1 Ensemble-based source profiles (EBSPs) for summer source-specific PM_{2.5} corresponding to sources of primary PM_{2.5} for Atlanta, GA; Birmingham, AL; St. Louis, MO; and Dallas, TX. The EBSPs are unitless but can be roughly interpreted as the amount (in $\mu\text{g}/\text{m}^3$) of each chemical species per $\mu\text{g}/\text{m}^3$ of source-specific PM_{2.5}.

Figure S2 Ensemble-based source profiles (EBSPs) for winter source-specific PM_{2.5} corresponding to sources of primary PM_{2.5} for Atlanta, GA; Birmingham, AL; St. Louis, MO; and Dallas, TX. The EBSPs are unitless but can be roughly interpreted as the amount (in $\mu\text{g}/\text{m}^3$) of each chemical species per $\mu\text{g}/\text{m}^3$ of source-specific PM_{2.5}.

Table S1 Mean (minimum, maximum) correlation between daily concentrations of PM_{2.5} mass and source-specific PM_{2.5} across Atlanta, GA; Birmingham, AL; St. Louis, MO; and Dallas, TX.

Table S2 Mean (standard deviation) number of daily emergency department visits for respiratory diseases and subcategories of respiratory disease for Atlanta, GA; Birmingham, AL; St. Louis, MO; and Dallas, TX.

Table S3 Number of days of available data for selected tracer PM_{2.5} chemical constituents for Atlanta, GA; Birmingham, AL; St. Louis, MO; and Dallas, TX. Tracers were selected as potassium (K) for biomass burning PM_{2.5}, EC for diesel PM_{2.5}, zinc (Zn) for gasoline PM_{2.5}, silicon (Si) for dust PM_{2.5}, as well as OC for both mobile and burning PM_{2.5}.

Table S4 Average (standard deviation) concentration and median of city-specific interquartile ranges (IQR) in µg/m³ for selected tracer PM_{2.5} chemical constituents in Atlanta, GA; Birmingham, AL; St. Louis, MO; and Dallas, TX. Tracers were selected as potassium (K) for biomass burning PM_{2.5}, EC for diesel PM_{2.5}, zinc (Zn) for gasoline PM_{2.5}, silicon (Si) for dust PM_{2.5}, as well as OC for both mobile and burning PM_{2.5}.

Table S5 Mean (minimum, maximum) correlation between daily concentrations of selected tracer PM_{2.5} chemical constituents across for Atlanta, GA; Birmingham, AL; St. Louis, MO; and Dallas, TX. Tracers were selected as potassium (K) for biomass burning PM_{2.5}, EC for diesel PM_{2.5}, zinc (Zn) for gasoline PM_{2.5}, silicon (Si) for dust PM_{2.5}, as well as OC for both mobile and burning PM_{2.5}.

Table S6 Mean (minimum, maximum) correlation between daily concentrations of PM_{2.5} mass, source-specific PM_{2.5}, and selected tracer PM_{2.5} chemical constituents across Atlanta, GA; Birmingham, AL; St. Louis, MO; and Dallas, TX. Tracers were selected as potassium (K) for biomass burning PM_{2.5}, EC for diesel PM_{2.5}, zinc (Zn) for gasoline PM_{2.5}, silicon (Si) for dust PM_{2.5}, as well as OC for both mobile and burning PM_{2.5}.

Figure S3 Estimated relative risks of pneumonia ED visits for interquartile range increases (IQR) in PM_{2.5} mass and source-specific PM_{2.5} using single day exposure lags 0 to 3 for Atlanta, GA; Birmingham, AL; St. Louis, MO; and Dallas, TX.

Figure S4 Estimated relative risks of chronic obstructive pulmonary disease ED visits for interquartile range increases (IQR) in PM_{2.5} mass and source-specific PM_{2.5} using single day exposure lags 0 to 3 for Atlanta, GA; Birmingham, AL; St. Louis, MO; and Dallas, TX.

Figure S5 Estimated relative risks of upper respiratory infection ED visits for interquartile range increases (IQR) in PM_{2.5} mass and source-specific PM_{2.5} using single day exposure lags 0 to 3 for Atlanta, GA; Birmingham, AL; St. Louis, MO; and Dallas, TX.

Figure S6 Estimated relative risks of asthma/wheeze ED visits for interquartile range increases (IQR) in PM_{2.5} mass and source-specific PM_{2.5} using single day exposure lags 0 to 3 for Atlanta, GA; Birmingham, AL; St. Louis, MO; and Dallas, TX.