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Supplemental Material

Cardiopulmonary Effects of Fine Particulate Matter Exposure among Older Adults, during Wildfire and Non-Wildfire Periods, in the United States 2008-2010

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Figure S1. Average $PM_{2.5}$ concentrations for CMAQ ($PM_{2.5}^{\text{Tot CMAQ-M}}$) and monitors ($PM_{2.5}^{\text{Tot}}$).

Figure S2. 185 Counties included in analysis with ≥10,000 of those 65+, 2008-2010, 120 counties had monitoring sites.

Figure S3. Percent difference per 10µg/m^3 change in $PM_{2.5}$ concentrations in hospitalizations during 2008-2010, among U.S. Medicare recipients 65+, population ≥10,000 of those 65+ Smoke days defined as wildfire-specific contribution >5µg/m3 and non-smoke days defined as wildfire-specific contribution ≤ 5µg/m. Associations are estimated using single lag model for the interaction between PM2.5 ($PM_{2.5}^{\text{Tot CMAQ}}$, $PM_{2.5}^{\text{Tot CMAQ-M}}$, or $PM_{2.5}^{\text{Tot}}$) and SmokeDay adjusting for day of the week, day (natural spline with 6 of freedom per year), temperature (natural spline with 3 degrees of freedom), and relative humidity (natural spline with 3 degrees of freedom) for each county, followed by a meta-analysis. Using $PM_{2.5}^{\text{Tot CMAQ}}$ 170 counties, 168 counties, and 170 counties were used in the meta-analyses for RSP, ABW, and CVD hospitalizations, respectively. Using the other metrics ($PM_{2.5}^{\text{Tot CMAQ-M}}$ or $PM_{2.5}^{\text{Tot}}$) 97 counties, 85 counties, and 97 counties were used in the meta-analyses for RSP, ABW, and CVD hospitalizations, respectively. The y-axes limits differ between hospitalization types.

Figure S4. Percent difference per 10μg/m^3 change in $PM_{2.5}$ concentrations in hospitalizations during 2008-2010, among U.S. Medicare recipients 65+, lower threshold
Smoke days defined as wildfire-specific contribution >1μg/m3 and non-smoke days defined as wildfire-specific contribution ≤ 1μg/m. Associations are estimated using single lag model for the interaction between PM2.5 ($PM_{2.5}^{Tot\ CMAQ}$, $PM_{2.5}^{Tot\ CMAQ\text{-}M}$, or $PM_{2.5}^{Tot}$) and SmokeDay adjusting for day of the week, day (natural spline with 6 degrees of freedom per year), temperature (natural spline with 3 degrees of freedom), and relative humidity (natural spline with 3 degrees of freedom) for each county, followed by a meta-analysis. Using $PM_{2.5}^{Tot\ CMAQ}$ 671 counties, 375 counties, and 684 counties were used in the meta-analyses for RSP, ABW, and CVD hospitalizations, respectively. Using the other metrics ($PM_{2.5}^{Tot\ CMAQ\text{-}M}$ or $PM_{2.5}^{Tot}$) 167 counties, 118 counties, and 173 counties were used in the meta analyses for RSP, ABW, and CVD hospitalizations, respectively. The y-axes limits differ between hospitalization types.

Figure S5. Percent difference per 10μg/m^3 change in $PM_{2.5}$ concentrations in hospitalizations during 2008-2010, among U.S. Medicare recipients 65+, by region Smoke days defined as wildfire-specific contribution >5μg/m3 and non-smoke days defined as wildfire-specific contribution ≤ 5μg/m. West includes counties from: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. Southeast includes counties from: Alabama, Arkansas, Florida, Georgia, North Carolina, and Virginia. Associations are estimated using single lag model for the interaction between PM2.5 ($PM_{2.5}^{Tot\ CMAQ}$, $PM_{2.5}^{Tot\ CMAQ\text{-}M}$, or $PM_{2.5}^{Tot}$) and SmokeDay adjusting for day of the week, day (natural spline with 18 degrees of freedom), temperature (natural spline with 3 degrees of freedom), and relative humidity (natural spline with 3 degrees of freedom) for each county, followed by a meta-analysis. For western counties, using $PM_{2.5}^{Tot\ CMAQ}$ 280 counties, 132 counties, and 290 counties were used in the meta-analyses for RSP, ABW, and CVD hospitalizations, respectively. For western counties, using the other metrics ($PM_{2.5}^{Tot\ CMAQ\text{-}M}$ or $PM_{2.5}^{Tot}$) 85 counties, 51 counties, and 88 counties were used in the meta-analyses for RSP, ABW, and CVD hospitalizations, respectively. For southeastern counties, using $PM_{2.5}^{Tot\ CMAQ}$ 155 counties, 129 counties, and 156 counties were used in the meta-analyses for RSP, ABW, and CVD hospitalizations, respectively. For southeastern counties, using the other metrics ($PM_{2.5}^{Tot\ CMAQ\text{-}M}$ or $PM_{2.5}^{Tot}$) 33 counties, 32 counties, and 33 counties were used in the meta-analyses for RSP, ABW, and CVD hospitalizations, respectively. The y-axes limits differ between hospitalization types.

Figure S6. per 10μg/m^3 change in $PM_{2.5}$ concentrations in hospitalizations during 2008-2010, among U.S. Medicare recipients 65+, cumulative risk Smoke days defined as wildfire-specific contribution >5μg/m3 and non-smoke days defined as wildfire-specific contribution ≤ 5μg/m. Associations are estimated an unrestricted distributed lag model for the effect of $PM_{2.5}^{Tot\ CMAQ}$ on smoke days and non-smoke days, adjusting for day of the week, day (natural spline with 6 degrees of freedom per year), temperature (natural spline with 3 degrees of freedom), and relative humidity (natural spline with 3 degrees of freedom) for each county, followed by a meta-analysis. A total of 639 counties, 362 counties, and 652 counties were used in the meta-analyses for RSP, ABW, and CVD hospitalizations, respectively. The y-axes limits differ between hospitalization types.